JOURNAL OF
Chemical Education

Owned and Published by the DIVISION OF CHEMICAL EDUCATION OF THE AMERICAN CHEMICAL SOCIETY

Volume 58, 1981

January–December

OFFICERS OF THE DIVISION OF CHEMICAL EDUCATION

B. Z. SHAKHASHIRI, *Chairman*
G. A. CROSBY, *Chairman-elect*
L. N. FERGUSON, *Past Chairman*
W. J. STRATTON, *Treasurer*
E. L. SCHULTZ, *Member-at-Large*
J. C. DAVIS, *Councillor*

BOARD OF PUBLICATIONS

J. A. BELL
W. B. COOK
G. A. CROSBY
D. A. DAVENPORT
L. N. FERGUSON
D. KOLB
B. Z. SHAKHASHIRI
W. J. STRATTON

EDITORIAL STAFF

J. J. LAGOWSKI, *Editor*
DEBORA ANN BITTAKER, *Assistant Editor*
MICKEY SARQUIS, *Secondary School Editor*

ASSISTANTS TO THE EDITOR

MARI LISA BLAIR
LINDA DAVIS KYLE
CORDELIA B. HIGGINS
MARIE S. STEPHENS
BARBARA J. ROBLES

BUSINESS STAFF

J. V. DEROSE, *Business Manager*
CENTCOM, INC., *Advertising Management*
J. STENZA, *Advertising Production Manager*

FEATURE EDITORS

JOHN J. ALEXANDER
RAYMOND D. BANGS
ELLEN AND JAY BARDOLE
W. ROBERT BARNARD
GERARD BARUCH
DARRELL H. BEACH
DAVID BYRUM
SHELDON COHEN
GEOFFREY DAVIES
FRANK DEHAAN
RON DELORENZO
W. CONARD FERNELIUS
ROGER FESTA
LEONARD FINE
HARRIET G. FRIEDSTEIN
GEORGE L. GILBERT
JAMES A. GOLDMAN
J. DUDLEY HERRON
ALBERT S. KIRSCH
ALAN MCCLELLAND
GRACE FISCHER MCGUFFIE
JOHN MOORE
MIRIAM NAGEL
MARY VIRGINIA ORNA, O.S.U.
ROD O'CONNOR
ERIC S. PROSKAUER
FRANK S. QUIRING
JOSEPH S. SCHMUCKLER
DUANE SELL
MICHAEL R. SLABAUGH
DOUGLAS D. SMITH
TOM TIPTON
GEORGE WIGER
HAROLD WITTCOFF
WALTER A. WOLF
JOHN H. WOTIZ

NOTICE TO AUTHORS

1. Forwarding Address. Papers intended for publication in the *Journal of Chemical Education* should be submitted to J. J. Lagowski, *Editor*, Department of Chemistry, University of Texas, Austin, Texas 78721. Papers for the Secondary School Section should be submitted to Mickey Sarquis, *Secondary School Editor*, Journal of Chemical Education, University of Miami—Middletown, Middletown, OH 45042.

2. Manuscript. The manuscript submitted should not have been published elsewhere. **Triplicate typewritten copies** (the original and two copies) must be submitted. Typing of both text and references should be **double-spaced** with 2–3 cm margins *on standard 8½ × 11 typing paper*. The title of the article should be followed by the name and business or institutional address of the author. If the paper has been presented at a meeting, a footnote giving name of the society, date, and occasion should be included but should not be numbered. Purple hectograph copy and mimeographed copy are not acceptable. The usual editorial customs, as exemplified in the most recent issues of the *Journal*, should be followed as closely as possible.

Galley proof of each article will be submitted to the author. This proof should be carefully corrected and returned promptly to the *Editor's Office*. Page proof will not be submitted.

The cost of publication and the press of manuscripts being what they are, *manuscripts should be limited to not more than 20 typewritten pages, including figures, tables and literature citations. Manuscripts describing experiments should not exceed 8 typewritten pages.*

3. References and Footnotes. In articles with more than five literature references, each reference to the literature should be designated by a number in italics (indicated in a typescript by a single underline) and enclosed in parentheses, corresponding in size with the body of the text and set in the line of reading matter, i.e., (6). References are to be assembled, arranged numerically, and placed at the end of the article under the heading, Literature Cited. The numbers in parentheses are to be placed flush with the margin and if the reference exceeds one line, the succeeding line or lines should be indented. **The list of references should be typed, double-spaced.**

In papers containing less than six literature references it is usually desirable that the references be handled as footnotes. Such references should be designated by superior numbers,[1] and the footnotes should be placed at the end of the text in numerical order. They should follow the same style as shown below for Literature Cited.

References to explanatory notes such as change of author address, author.acknowledgments, etc., should be designated beside the author's name by superior numbers in sequence with other footnotes in the article.

When specific citations of previous literature are not made but when it seems desirable to append a general bibliography, it is preferable that arrangement be made alphabetically on the basis of authors' or senior authors' names.

A *reference to a periodical* should include, in the order named: (1) author's name, (2) name of periodical (use of standard abbreviations designated in the "List of Periodicals Abstracted by *Chemical Abstracts*"), (3) volume number, (4) page (give page number on which the article begins) and (5) date of publication.

Examples:

(1) Ihrig, J. L., and Caldwell, R. G., J. CHEM. EDUC., **32**, 320 (1955).

(2) Gowing, D. P., and Leeper, P. W., *Science*, **122**, 1267 (1955).

A reference to a book should include, in the order named: (1) author's name, (2) title of book (enclosed in quotation marks), (3) edition, if more than one, (4) name of publisher, (5) address of publisher, (6) date of publication, (7) volume number, (8) pages (give exact page number at which the point cited is to be found).

Example:

(1) Latimer, Wendell M., and Hildebrand, Joel H., "Reference Book of Inorganic Chemistry," 3rd ed., The Macmillan Co., New York, **1951**, p. 110.

4. Illustration. Not all articles lend themselves to illustration, but articles which do should be accompanied by as many pertinent illustrations as possible. The best possible selection of illustrations available will be made by the editorial staff. *Include two copies of the illustrations plus the original.* As a rule, apparatus, particularly if complicated, is best presented by means of line or working drawings. Photographs are sometimes sufficient, however. When both can be obtained, it is generally desirable to include both with the manuscript. **Lettering must be done in black drafting ink by Leroy or other stencil sets; press-on letters also may be used. If the latter is used, the letters should have a protective coating (available in art and drafting supply stores) to prevent chipping and/or loss of lettering; another method is to carefully cover the lettering with cellophane tape (not magic transparent tape).** The most common shortcoming of submitted illustrations is lettering which is too small in the original to be readable when the figure is reduced to column width. A useful rule of thumb to follow is that lettering on a drawing 10 in. wide should be ⅛–½ in. tall. Lines in figures and graphs which fill an 8½ × 11 sheet should be done with a number *3* pen. Smaller figures should be done with correspondingly smaller pens. *Figures should be mounted on standard 8½ × 11 paper if they are not already that size; they should not exceed page size as they cannot be reduced properly if they do.*

Photographs should have a gloss finish and should be at least postcard size—larger, if possible. Only prints which are unblurred and which show sharp contrast between light and dark areas can be satisfactorily reproduced. Authors should exercise scrupulous care in crediting photographs which require credit.

Line drawings should be carefully prepared in *black India ink* on plain white drawing *vellum, blue tracing cloth*, or *blue-lined coordinate paper* two or three times the size desired in the printed cut; it is convenient, when permitted by the scale required, to have them the size of the manuscript. Line drawings should not exceed standard 8½ × 11 size.

For *graphs* coordinate paper should be printed in *blue* only, with the important coordinate lines ruled over in black; the black-ruled square should in general not be less than ten millimeters on a side; the lines of the curves should be the heaviest, except the axes; points on the curves should be indicated by true circles, not crosses. All lines, legends, numbers, and letters which cannot be set in type at the margin of the cut but must constitute a portion of the cut itself are to be so proportioned that they will be clearly legibile in the cut. *Typewritten designations are not black enough to reproduce satisfactorily.* Where lettering cannot be done adequately, designations left in blue pencil can be taken care of by the editorial office.

Tables should be placed on separate sheets, with a marginal notation on the manuscript to indicate preferred location.

All photographs, line drawings, and tables should be provided with self-explanatory titles or legends. The legends for the illustrations should be typed, double-spaced, on a separate sheet. *Each illustration should be marked in blue pencil on the margin with the name of the author, the figure number, and the title of the article to which it refers.*

5. Reprints. A reprint price list is printed on the reverse side of the order slip which accompanies galley proofs. Reprints are delivered approximately six to eight weeks after articles appear.

Jan 1–80; A1–A36
Feb 81–202; A37–A76
Mar 203–288; A77–A124
Apr 289–368; A125–A158
May 369–448; A159–A184
June 449–524; A185–A210
July 525–596; A211–A232
Aug 597–668; A233–A250
Sept 669–750; A251–A282
Oct 751–834; A283–A320
Nov 835–972; A321–A352
Dec 972–1066; A353–A388

ANNUAL INDEX
Journal of Chemical Education
Volume 58, 1981

The annual index for Volume 58 of the Journal of Chemical Education is divided into several parts. Book Reviews are indexed separately both by author and book title. Authors of articles are listed separately and are cross-referenced to other authors of the same article. The subject index includes titles listed by keywords, subject listings and listings of articles by feature column. The latter two are distinguished from the titles by printing the listing heading in italics. The following abbreviations are used throughout the index to indicate in which feature column an article appeared.

AA	*Applications and Analogies*
AR	*Apparatus Review*
AV	*AV Review*
CB	*Chemical Bonds*
CE	*Cooperative Education*
CEC	*Chem Ed Compacts*
CHEM I	*Chem I Supplement*
CHS	*Contemporary History Series*
CM	*Chemical of the Month*
CP	*Chemical Principles Revisited*
CS	*Computer Series*
CURR	*Curriculum Report*
EXAM	*Exam Question Exchange*
IDEAS	*Ideas from Everywhere*
IE	*Interpretive Experiments*
IF	*Inflation Fighters*
IND	*Real World of Industrial Chemistry*
JOULES	*$2YC_3$ Joules*
LA	*Learning Activities*
LTE	*Letter to the Editor*
OCE	*Opportunities in Continuing Education*
50 MIN	*50-Minute Experiment*
PAST	*Something New From the Past*
PLACE	*A Place for Chemists*
PO	*Provocative Opinion*
PROFILES	*Profiles in Chemistry*
SAFETY	*Safety in the Chemical Laboratory*
SBS	*Story Behind the Story*
ST	*Safety Tips*
TD	*Tested Demonstrations*
TF	*Textbook Forum*
TING	*Brain Tinglers*
TS	*Thumbnail Sketches*
VIEW	*View from my Classroom*

Author Index

A

Adams, Mary. Teaching students from other cultures (JOULES). 1010
Ajeyalemi, Durojaiye A. The need for cooperation between university chemical education and industry in Nigeria (CE). 361
Akers, Gwyn E.—*See* **Akers, Hugh H.**
Akers, Hugh. Buffer pH in electrolysis (EXAM). 1014
— and **Akers, Gwyn E.** Superlative problems (TING). 795
Aklonis, J. J. Mechanical properties of polymers. 892
Alexander, John J., *editor.* Exam question exchange. 362, 1014
Allpress, K. N., Cowell, B. J., and **Herd, A. C.** The vinyl acetate content of packaging film: A quantitative infrared experiment. 741
Alvarino, Jose M.—*See* **Lain, Luis.**
Anderson, Owen T.—*See* **Armstrong, William H.**
Archer, Leonard J., George, T. Adrian., and **Noble, Mark E.** Synthesis of dinitrogen and dihydrogen complexes of molybdenum. 727
Armstrong, William H., Dorflinger, Ernest E., Anderson, Owen T., and **Willeford, Jr., Bennett R.** A physical chemistry experiment in Mossbauer spectroscopy. 515
Atkins, Bob. Chemistry: A basic approach (AV). 277
Atkinson, George F. The implicit curriculum (PO). 560
Azay, P., Marquaire, P. M., Pommier, P., and **Scacchi, G.** A versatile oven with very little thermal inertia. 441

B

Bader, Morris. Rubber elasticity—a physical chemistry experiment. 285
Baffier, N.—*See* **Letellier, P.**
Bailar, Jr., John C. Some developments in the stereochemistry of coordination compounds in the last fifty years. 674
Bailey, R. A., and **Zubrick, J. W.** Further thoughts on the integrated lab (L). 368
— A solution calorimeter and thermistor bridge for undergraduate laboratories. 732
Balaco, Maria Rosa. Atomic structure (PAST). 721
Balenovich, Walter—*See* **Brindle, Ian D.**
Bangs, Raymond D., *editor.* Opportunities in continuing education. 189, 427
Bard, James R. A Moire pattern analogy to electron motion (AA). 480
Bardole, Ellen, and **Bardole, Jay**, *editors.* $2YC_3$ joules. 636, 698, 1010
Bareiski, Paul M. Use of a photocopied slide rule to complement limited function calculators. 718
Barnard P. W. C., and **Smith, B. V.** The Menschutkin reaction: A group experiment in a kinetic study. 282
Bartlett, Albert A. Corrections to estimates of fossil fuel lifetimes. 501
Baruch, Gerard., *editor.* 50-minute experiment. 192, 506
Baruch, Gerard P. Thermometer clamp-suspension clamp (AR). 965
Batt, Russell H. Perspective projections of function surfaces. (CS). 987
Battino, Rubin. Two voyages of the starship chemterprise (CEC). 431
Baxter, Jr., John F.—See **Kauffman, George B.**
Bazuin, C. G., and **Eisenberg, A.** Ion-containing polymers: Ionomers. 938
Beach, Darrell H., *editor.* Chemical of the month. 325, 424, 468, 722
Beaulieu, Patrick L., and **Woodin, Terry S.** Notation confusion in volume ratio dilution. 740
Behelfer, Jack E.—*See* **Leonard, Jack E.**
Bell, Ronald S.—*See* **Dien, Kathy J.**
Belliveau, James F., O'Leary, Jr., Gerard P., and **Hajian, Harry.** The biochemistry of the muscle contraction process: An undergraduate laboratory experiment using viscosity to follow the progress of a reaction. 442
Bellomo, Athos—*See* **De Marco, Domenico.**
Ben-Zvi, Ruth and **Silberstein, Judith.** The "chemical fountain": An old experiment in a new setting. 68
Benkel, Meinhart—*See* **Brindle, Ian D.**
Bent, Henry A. A dialogue concerning the two chief world systems: Art and science (CB). 331
Bernstein, R. L.—*See* **Melnikow, Joy.**
Biaglow, John E. The effects of ionizing radiation on mammalian cells. 144
Bick, I. R. C., Blackman, A. J. and **Browne, E. J.** Countercurrent distribution with simple equipment. 814
Biernacki, Tony—*See* **Brindle, Ian D.**
Billmeyer, Jr., Fred W. Color and the appearance of objects (L). 367
— **Kumar, Romesh,** and **Saltzman, Max.** Identification of organic colorants in art objects by solution spectrophotometry: Pigments. 307
Birk, James P., McGrath, Larry, and **Gunter, S. Kay.** A general chemistry experiment for the determination of the oxygen content of air. 804
Bishop, Marvin, and **Zamora, Edgardo.** Computer-assisted data analysis of enzyme kinetics (CS). 242
Bishop, R. Daniel. Formulas and equations. (CS). 987
Blackman, A. J.—*See* **Bick, I. R. C.**
Blair, Waymon—*See* **Moore, John T.**
Blaise, Paul, Pujol, Phillippe, and **Henri-Rousseau, Olivier.** The driving force of addition and elimination reactions clarified through the Hellmann-Feynman theorem. 615
—*See* **Boulil, Belkacem.**
Blake, Antony B. Exchange stabilization and the variation of ionization energy in the p^n and d^n series. 393
Bleam Jr., William. The fruit basket analogy (AA). 184
Blinder, S. M. Quantum chemistry via the periodic law. 761
Blumenkopf, Todd A., Swanson, Anne Barrett, and **Larsen, Robert P.** Mobility-handicapped individuals in the college chemistry curriculum: Students, teachers, and researchers. 213
Boehm, Garth, and **Dwyer, Mark.** Infrared spectrum of methanol: A first-year student experiment. 809
Bohning, James J. The grade thirteen syndrome (PO). 717
Bonnette, Jr. A. K., and **Gandy, S. E.** Isotopic Exchange in Prussian blue. 355
Boulil, Belkacem, Blaise, Paul, and **Henri-Rousseau, Olivier** An intuitive approach to the relative magnitude of the atomic coefficients in the π molecular orbitals of butadiene. 29
Bowman, Leo H. Classroom participation—introduction to polymer science (CEC). 548
Bozzelli, Joseph W., and **Snyder, Jonathan.** A simple capillary flow meter. 522
Braun, Jr., C. V.—*See* **Snell, K. D.**
Braun, Loren L., and **Law, Raymond L.** An early laboratory introduction to IR spectroscopy: Gaseous deuteroalkanes. 79
Breneman, G. L. Microcomputer simulation of lab instruments (CS). 410
—The impact of micrographics (CS). 987
Bricker, Clark E., Taylor, Max A., and **Kolb, Kenneth E.** Simple classroom demonstration of gas chromatography. 41
Brill, T. B. Nuclear quadrupole resonance of R3 SbX_2 Compounds (IE). .519
—Letter to the Editor. 367
Brindle, Ian D., Miller, Jack M., Richardson, Mary F., Balenovich, Walter, Benkel, Meinhart, and **Biernacki, Tony.** Laboratory instruction for the motor impaired. 232
Briner, R. C. Forensic science defined (L). 288
Brown, David W.—*See* **Cantwell, Frederick F.**
Brown, G. R.—*See* **Cunningham, Cindy C.**
Browne, E. J.—*See* **Bick, I. R. C.**
Bulmer, R. S., Senogles, E., and **Thomas, R. A.** General acid catalysis: A flexible experiment, adaptable to student ability and various teaching approaches. 738
Bunker, Don L.—*See* **Houle, Frances A.**
Burt, J. T., Byrd, J. E., Helm, G. L., Perona, M. J., Ristow, A. R., and **Wilkinson, D. E.** A versatile and inexpensive instrument/computer interface (CS). 549
Busby, David C., Fendrick, Carol M., and **George, T. Adrian.** Reactions of a dinitrogen complex of molybdenum. 728
Buss, Donald E. K_{sp} made simple. 958
Butler, Sara, and **Malott, Sally.** Textile chemistry for the artist. 295
Buzzard, Gene P. Double your pleasure—a team teaching concept (VIEW). 960
Byrd, J. E.—*See* **Burt, J. T.**
Byrum, David, *editor.* Apparatus review. 437, 668, 965

C

Cain, Edward B. Incorporating descriptive chemistry into an inorganic course. 651
—*See* Gavin, John J.
Campbell, Donald E.—*See* **Platt, Steven G.**
Cantwell, Frederick F. and **Brown, David W.** Liquid chromatographic determination of nitroanilines: An experiment for the quantitative analysis laboratory. 820
Canty, Allan J., and **Canty, Carolyn D.** Copper in apple ash glazes for ceramics: An example of environmental chemistry and chemistry for potters (L). 448
Canty, Carolyn D.—*See* **Canty, Allan J.**
Carman, Richard T. KEMGAM: A chemical adventure (CS). 695
Carr, James D.—*See* **Kelter, Paul B.**
Carr, Stephen H.—*See* **Geil, Philip H.**
Carraher, Jr., Charles E. Organometallic polymers. 921
Carter, Kenneth Nolon—*See* **Huff, Randolph Bruce**
Cassen, T. A versatile program for drill in inorganic nomenclature and formula writing (CS). 49
Cassidy, Patrick E. Polymers for extreme service conditions. 951

Cates, Charles R., and **Moore, John T.** A white ammonia fountain. 498
—*See* Garrett, James M.
—*See* Moore, John T.
Caton, Jr., Roy D. Snowed in (TING). 66
Cavin, Claudia, S.—*See* **Cavin, E. D.**
Cavin, E. D., and **Cavin, Claudia S.** A simulation game for decision-making (CS). 410
Cervellati, R., and **Perugini, D.** The understanding of the atomic orbital concept by Italian high school students. 568
Chamberlin, John M. Computer drill in thermodynamics (CS). 554
Chapman, Kenneth and **Fleming, Janice.** Field test evaluation report on introduction to polymer chemistry. 904
Cheer, Clair J. Removal of silver nitrate stains. 201
Chen, T. S.—*See* **Thomas, J. K.**
Chirpich, Thomas P. Analysis of student laboratory data: An illustration of the usefulness of an inexpensive programmable pocket calculator. 436
— Finding the number of neutrons when the mass loss exceeds 1 AMU (EXAM). 1014
Chokotho, N. C., and **Leisten, J. A.** A symposium for students. 490
Clare, Brian W. A comprehensive treatment of acid-base equilibria on a pocket calculator (CS). 555
Cohen, R., Matzek, C., Schlosser, S. and **Huber, C. O.** Amperometric determination of phenol bromination kinetics. 823
Cohen, Richard W., and **Whitmer, John C.** The Gibbs function versus degree of advancement: The Gibbs valley. 21
Cohen, Sheldon H., *editor.* Inflation fighters. 281
Coleman, William F. A topics course on chemical application of lasers. 652
Combes, R.—*See* **Letellier, P.**
Cook, William B. IUPAC-Committee on teaching of chemistry: Report to USA. 45
Cornelius, Richard. Isomers of octahedral coordination complexes (CS). 552
Cowell, B. J.—*See* **Allpress, K. N.**
Crabtree, Robert H.—*See* **Pickering, Miles.**
Crane, David W. The open laboratory—an alternative (VIEW). 794
Crosby, G. A. Teaching chemistry to the physically handicapped: Attidudinal barriers for the physically handicapped. 205
Crosby, G. A. Chemistry and the visually handicapped. 206
Cunningham, Cindy C., Brown, G. R., and **St. Pierre, L. E.** Evaluation of experimental data: A laboratory exercise. 509
Currie Jr., James T. and **Pike, Ronald M.** CAIQOA: Computer-assisted instrumental: qualitative organic analysis (CS). 46

D

Dalton, David R.—*See* **Tierney, John.**
Darlington, C. LeRoy. Fifteen years with a nonacademic chemistry course (VIEW). 711
Das, Ranjan, and **Sannigrahi, A. B.** The factorization method and its applications in quantum chemistry. 383
Davenport, Derek A. Sulfur, stereochemistry and the Reverend William Archibald Spooner. 682
—Apes and Peacocks too: A report to an academy. 671
—*See* **Mahoney, Dennis W.**
—*See* **Sweeney, Joyce A.**
David, Carl W. On orbital drawings. 377
Davies, Colin S. Teaching introductory chemistry: Generality of the PSI approach. 686
Davies, Geoffrey, *editor.* Cooperative education. 361, 707
Davis, Michael, and **Morris, Jill L.** Why are S-N bonds so rare in nature? 760
De Marco, Domenico, Bellomo, Athos, and **De Robertis, Alessandro.** Non-linear least-squares optimization of parameters for first-order kinetics on programmable calculators (CS). 696
De Robertis, Allessandro—*See* **De Marco, Domenico.**
De Witt, H. D. A versatile pipet bulb. 733
Deckey, George, and **Marzzacco, Charles.** A permanent demonstration of vapor pressures of solids, liquids and mixtures (TD). 725
DeHaan, Frank, *editor.* Interpretive experiments. 519
Delaney, Michael F., and **Warren, Jr., F. Vincent.** Teaching chemometrics: A course on application of mathematical techniques to chemistry (CS). 646
DeLorenzo, Ron, *editor.* Applications and analogies. 184, 327, 480, 645, 787, 996
DeLorenzo, Ronald. Freeze-proof bugs (AA). 788
—Growing concrete (AA). 787
—In two years will it all be forgotten? (IDEAS). 426
—Neutrography: particles versus waves (AA). 327
—Why oatmeal sticks to your ribs (AA). 787
—*See* **Sarquis, Mickey.**
Demas, J. N.—*See* **Pearson, T. D. L.**
Derkse, W. Popper's epistemology as a pedagogic and didactic principle, or: Let them make more "mistakes." 565
Dersch, Diana, Rahm, Robert, and **Hohertz, H. E.** The removal of silver nitrate stains (IDEAS). 966
Dewey, Fred M. Occupational health and safety program at Metropolitan State College (SAFETY). A93
Dewhurst, F. R.—*See* **Dewhurst, F.**
Dewhurst, F., and **Dewhurst, F. R.** Balloons and the teaching of chemistry. 44
Dheu, M. L., and **Perez, S.** Interactive computer program system for plotting molecules and crystal structures (CS). 552
Di Giacomo, Beatrice, Semino—*See* **Violino, Paolo.**
Dien, Kathy J., Bell, Ronald S., and **Morris, Michael D.** A teaching gas chromatograph/microcomputer interface using the general-purpose interface bus (CS). 243
Dill, Dan. Dill's Dillies (IDEAS). 67
DiPippo, Ascanio G. Colmolaity (colmoles). 619
Dirreen, Glen E.—*See* **Shakhashiri, Bassam Z.**
Dobosh, Paul A. S_N1S_N2—Graphics to improve analysis of organic kinetics (CS). 693
Dorflinger, Ernest E.—*See* **Armstrong, William H.**
Dorfman, Leon M. Principles and techniques of radiation chemistry. 84
Downey, Daniel M.—*See* **Matviya, Thomas M.**
Drake, Robert F. Poor laboratory practices depicted on child welfare stamp (SAFETY). A293
Dubin, Paul L. A polymer-solution "thermometer": A demonstration of the thermodynamic consequences of specific polymer-solvent interactions. 866
Dunlap, R.—*See* **Olesen, B.**
Dutton, Melvin L.—*See* **Wiger, George.**
Dwyer, Mark.—*See* **Boehm, Garth.**

E

Ealy, Jim., *editor.* What's happening in your part of the country? Northeast. 202, 287, 445, 523, 596, 667, 746.
Eberhardt, W. H. Errors in retrospect (TBF). 359
Eisenberg, A.—*See* **Bazuin, C. G.**
Eiswirth, M.—*See* **Schwankner, R.**
Eliason, Robert, and **McMahon, Terence.** Temperature effect on reaction rates (TD). 354
England, Don. A helpful stereochemical instructional tool. 31
Enyedy, Zoe. Elemental concentration (IDEAS). 426
Estell, John K. Computerized organic nomenclature drill (CS). 47
Evans, Thomas A.—*See* **Lowrey, Jonathan S.**
Eyring, Edward M.—*See* **Mei, Elizabeth H.**

F

Fawcett, Howard H. Safety: What do we really mean? (SAFETY). A45
Feinstein, H. I. Detection of carbon monoxide in tobacco smoke using molybdosilicate (TS). 633
—Hard rock (TING). 435
—"Holey" crystals! (TING). 638
—Setting high standards (TING). 567
Fendrick, Carol M.—*See* **Busby, David C.**
Ferguson, Lloyd N. Bio-organic mechanisms: II. Chemoreception. 456
Fernelius, W. Conard. Electrochemical destruction of pathogens (IN). 558
—Replacement for asbestos (IN). 558
Fernelius, W. C., *editor.* Real world of industrial chemistry. 270, 432, 557
Festa, Roger R. Wolfgang Pauli (1900–1958): A brief anecdotal biography (PROFILES). 273
Festa, Roger R., *editor.* Profiles in chemistry. 60, 273, 305, 496, 625, 789.
Field, Richard J. BASIC version of the stiffly stable, gear numerical integrator (CS). 408
Fine, Leonard, *editor.* Contemporary history series. 527, 535
Firsching, F. H. Anomalies in the periodic table. 478
Fisher, Virginia W. Organizing a high school chemist olympics. 720
Fitzgerald, Paul J.—*See* **Marzik, James V.**
Flath, Patricia—*See* **West, Kenneth.**
Fleming, Janice—*See* **Chapman, Kenneth.**
Foote, Jack. Increasing interest and motivation through practical applications of chemistry (VIEW). 198
Foster, Natalie I., and **Heindel, Ned D.** The discovery of nitroglycerine: Its preparation and therapeutic utility (SBS). 364
Fowler, Linda S. Building a periodic table (LA). 634
Francis, Ann—*See* **Shakhashiri, Bassam Z.**
Franzen, Gerald. The implementation of the cooperative education program by the chemistry department of Thomas More College (CE). 708
—The faculty benefits (CE). 709
Frazer, M. J. Recommendations for the Maryland Conference. 454
Friedman, Paul. An inexpensive, accurate air sampling pump. 199
Friedstein, Harriet G., *editor.* AV review. 65, 277, 413, 572, 747, 828, 967, 1030
Friedstein, Harriet G. A short history of the chemistry of painting. 291
Fuchs, Richard. A timed constant current source for calorimeter calibration. 594
Fulkrod, John E. How big is Avogadro's number (or how small are atoms, molecules and ions) (TS). 508
Furth, Paul S.—*See* **Zuczek, Norbert M.**

G

Gandy, S. E.—*See* **Bonnette, Jr. A. K.**
Garcia, Jose Miguel Gallego. Molecular parameters of diatomic molecules: A

programmable calculator program. 610
Garcia-Mateos, I., Herraez, M. A., Rodrigo, M., Rodriguez, L. J., and **Velazquez, M. M.** Catalysis by micelles and by cycloamyloses: A comparative set of kinetic experiments. 584
Gardner, Marjorie H.—*See* **Shakhashiri, Bassam Z.**
Garrett, James M., Henry, Bruce A., and **Cates, Charles R.** Lagormorphs and enantiomorphs—simple stereomodels (L). 448
—*See* **Moore, John T.**
Gaus, P. L., and **Pedersen, Lori A.** A new transfer flask for quantitative analysis. 353
Gavin, John J., Cain, Edward B., Menchel, Robert S., Rockwell, Dale L., and **Sharpless, Nansie S.** Chemistry and the hearing impaired. 209
Geil, P. H. The morphology of crystalline polymers. 879
— and **Carr, Stephen H.** EMMSE: Education modules for materials science and engineering. 908
Geoffroy, M., and **Hammons, J. H.** Structural information from liquid- and solid-phase ESR: The example of triphenyl-substituted radicals (C6 H5)3A of Group IVB Elements. 389
George, T. Adrian—*See* **Archer, Leonard J.**
George, T. Adrian—*See* **Busby, David C.**
Gerlach, Rudy. A method of financing safety goggles. 479
Ghodgaonkar, A. M.—*See* **Ramani, K.**
Gilbert, George L., *editor.* Tested demonstrations. 70, 280, 354, 505, 655, 725, 801, 1017
Goheen, David W. Chemicals from wood and other biomass: Part I: Future supply of organic chemicals (CHEM I). 465
— Chemicals from wood and other biomass: Part II: The chemistry of conversion (CHEM I). 544
Gonsalves, J. W.—*See* **Steenkamp, P. J.**
Goyal, Ashok Kumar. In search of mnemonics (L). 288
Graham, R. P. Gay-Lussac: Chemist extraordinary (PROFILES). 789
Grauwmeijer, Roger—*See* **Peake, Barrie M.**
Gray Jr., Edward T., and **Workman, Harry J.** Application of the TRS-80 in the classroom and the laboratory (CS). 239
— Interfacing and data collection with the TRS-80 (CS). 241
Green, Terry—*See* **Owen, G. Scott.**
Greenbowe, Thomas J.—*See* **Ward, Charles R.**
Greenstock, Clive L. Radiation sensitization in cancer therapy. 156
Greer, M. J.—*See* **Pearson, T. D. L.**
Gregory, S. A.—*See* **Kassman, A. J.**
Griffith, E. J. The industrial research chemist (PLACE). 268
Griffith, James R. The chemistry of coatings (CHEM I). 956
Grosser, Arthur E. Student response to simultaneous instruction in SI and conventional units. 366
Gunter, S. Kay—*See* **Birk, James P.**
Gurst, Jerome E. Spectroscopy in organic chemistry at the introductory level. 511

H

Haendler, Bianca L. "Centrifugal" force and the Bohr model of the hydrogen atom (TF). 719
Hajian, Harry—*See* **Belliveau, James F.**
Hamilton, J. H.—*See* **Tarbell, D. S.**
Hammons, J. H.—*See* **Geoffroy, M.**
Hanson, Allen L. "Scientific method" through laboratory experience. 434
Hanson, R. W. Further experiments with hemoglobin. 75
Hardcastle, J. E. Buffer action of proteins (TD). 726
Hardy, Winters—*See* **Snipp, Robert.**
Harris, Frank W. State of the art: Polymer chemistry. Introduction (In this issue). 836
—Introduction to polymer chemistry. 837
Harris, Jan., *editor.* What's happening in your part of the country? Southcentral. 524, 667, 746, 834, 971
Harriss, Donald K., and **Rioux, Frank.** Roothaan's method in one-dimension. 618
Heindel, Ned D.—*See* **Foster, Natalie I.**
Helm, G. L.—*See* **Burt, J. T.**
Henri-Rousseau, Olivier—*See* **Blaise, Paul.**
Henri-Rousseau, Olivier—*See* **Boulil, Belkacem.**
Henry, Bruce A.—*See* **Garrett, James M.**
Henry, Douglas R. Improved glass rod method for finding the tangent of a curve. 518
Herd, A. C.—*See* **Allpress, K. N.**
Herman, Harvey B.—*See* **Pate, Charles B.**
Herndon, William C. Structure-resonance theory for pericyclic transition states. 371
Herraez, M. A.—*See* **Garcia-Mateos, I.**
Hill, D. J. T., and **O'Donnell, J. H.** Some properties of poly(methyl methacrylate) studied by radiation degradation: An interdisciplinary student experiment. 174
Hill, Don—*See* **Suelter, Clarence H.**
Hill, John W. Weight-loss diets and the law of conservation of energy (AA). 996
—Chemical wastes and the law of conservation of matter (AA). 996
Hobbs, L. R., and **Mikell, W. G.** Laboratory Hood studies (SAFETY). A165
Hoffman, E.—*See* **Sunkel, J.**
Hoffman, Morton Z. Introduction to State-of-the-Art Symposium on Radiation Chemistry. 83
—and **Whitburn, Kevin D.** Intramolecular electron transfer from coordinated ligand-radicals. 119
Holdsworth, David. Practical applications of calculator simulations (CS). 697
—Buffer solutions. A calculator student simulation (CS). 987
Holt, Don. Career choice: Chemist or chemical engineer (PLACE). 494
Hondebrink, Jan G. Reform of chemical education in Holland. 963
Hoskins, Claron L., Reichardt, Paul B., and **Stolzberg, Richard J.** Determination of the extraction constant for zinc pyrrolidinecarbodithioate: An atomic absorption experiment for instrumental analysis. 580
Houle, Frances A., and **Bunker, Don L.** Simulation methods in kinetics courses (CS). 405
Howald, James C., and **Jones, Francis L.** Interpretation of an infrared spectrum on a minicomputer (CS). 554
Huber, C. O.—*See* **Cohen, R.**
Hudson, Edna. Man and molecules (AV). 65
—The properties of an ionic compound (AV). 66
—Chemical symbols, formulas and equations (AV). 65
Huff, Randolph Bruce, and **Carter, Kenneth Nolon.** Calculators and standard deviation (CS). 49
Hunnings, Keith, and **Hunnings, Lynall.** Arousing student interest through thirty-five years of changes in chemistry (VIEW). 63
Hunnings, Lyndall—*See* **Hunnings, Keith.**
Hutton, Alan T. Dramatic demonstrations for a large audience: The formation of hydroxyl ions in the reaction of sodium with water (TD). 506

I

Ikediobi, C. O. A novel source of distilled water for science laboratories in the humid tropics. 788

J

Jackman, Lance E. Separation of glycohemoglobins by ion exchange chromatography: An undergraduate biochemistry laboratory experiment. 77
Jackson, W. G., Lawrance, G. A., Lay, P. A. and **Sargeson, A. M.** Base-catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment. 734
James, Helen J., and **Nelson, Samuel L.** A classroom learning cycle: Using diagrams to classify matter (LA). 476
Jewett, Douglas M., and **Lawless, James G.** A method for applying a permanent Teflon coating to ground glass joints. 903
Johnsen, Alice C. Sulfur (CM). 468
Johnson, James S. Carcinogen control in the chemical laboratory (SAFETY). A257
Johnson, Jeffrey K., Van Willis, W., Seely, Jr., Oliver, and **Moore, John W.** Computer-assisted test construction in chemistry (CS). 177
Jones, Berne L., and **Kramer, Karl J.** An aid to molecular sequence studies: use of ceramic magnets to visualize sequences of peptides, proteins, and nucleic acids. 72
Jones, Francis L.—*See* **Howald, James C.**
Joshi, Bhairav D., LaGrou, Stephen E., and **Spooner, Douglas W.** Integral of ξ^r over harmonic oscillator wave functions. 39
Julian, Maureen M. Kathleen Lonsdale and the planarity of the benzene ring (SBS). 365
—What compound was discovered as a result of an insurance claim? (TS). 793
Justice, Jr., Joseph B.—*See* **Shapiro, Gary.**

K

Kane, Stephen M., and **Wilson, Katherine B.** The administration of a cooperative education program: The art of coordination (CE). 499
Kapuscinski, B. P. The purpose of laboratory instruction in high school chemistry: A historical survey. 194
Kassman, A. J., and **Gregory, S. A.** Inferring molecular structure from thermodynamic data. 247
Katz, David. The Katz' Meow (IDEAS). 67
Kauffman, George B. A modified thermit lecture demonstration (TD). 802
— and **Baxter, Jr., John F.** Hydrated cations in the general chemistry course. 349
Kauffman, J. M.—*See* **McKee, J. R.**
Kavanaugh, Robert D., and **Moomaw, William R.** Inducing formal thought in introductory chemistry students. 263
Keeffe, James R.—*See* **Melnikow, Joy.**
Keenan, A. G.—*See* **Snell, K. D.**
Kelter, Paul B., and **Carr, James D.** Microcomputer-simulated acid-base titration (CS). 48
Kemp, Marwin. Silver mirror (TD). 655
Kennard, Colin H. L. Periodic puzzles. 772
Kent, Craig D.—*See* **Wood, William F.**
Kerschner, Laurie E.—*See* **Shallenberger, Robert S.**
Kessick, Michael A.—*See* **Thomson, Bruce M.**
Kim, Joe H.—*See* **Kwon, Ik-Whan.**
King, Edward L. Thermodynamics of the thermal decomposition of water by closed chemical cycles. 975
Kingston, David W. Contact lenses in the laboratory (SAFETY). A289
Kirsch, Albert, *editor.* Chemical bonds. 200, 329, 331, 770
Knevel, Adelbert M. Inexpensive pipet delivery device. 663

Koch, Harold. "Scenario" (PO). 182
Kolb, Doris. Balancing complex redox equations by inspection (CP). 642
—See **Kolb, Kenneth E.**
Kolb, Kenneth E. Sebasic acid from adipic acid electrochemically (IN). 558
— and Kolb, Doris K. Treatment of industrial organic chemistry in current textbooks (IND). 557
—*See* **Bricker, Clark E.**
Kramer, Karl J.—*See* **Jones, Berne L.**
Kramers-Pals, H.—*See* **Mettes, C. T. C. W.**
Kreiser, Ralph R. Basic skills for chemistry: A pre-chemistry course (JOULES). 636
Krishanmurthy, S. Hydrothermal vents and light-independent living systems. 981
Kumar, Romesh—*See* **Billmeyer, Jr., Fred W.**
Kwon, Ik-Whan, and **Kim, Joe H.** Sequential decision-making process under conditions of uncertainty in drug analysis. 462

L

La Pensee, Clive W. Teacher training and the pupil-oriented lesson in West Germany. 569
Labianca, Dominick A. 1-(1-Phenylcyclohexyl) piperidine hydrochloride: A profile of an abused drug. 664
— and **Reeves, William J.** Chemistry and detective fiction: An interdisciplinary program for the nonscience major. 683
LaGrou, Stephen E.—*See* **Joshi, Bhairav D.**
Lain, Luis, Toree, Alicia, and **Alvarino, Jose M.** Radial probability density and normalization in hydrogenic atoms. 617
Larsen, Robert P.—*See* **Blumenkopf, Todd A.**
Larson, Olof G., Miller, Jeff W., and **Nienhouse, Everett J.** A rapid method for preparing solid compounds for infrared analysis. 80
Larson, R. E.—*See* **Stock, John T.**
Lauffer, Max A. Motion in viscous liquids: Simplified derivations of the Stokes and Einstein equations. 250
Law, Raymond L.—*See* **Braun, Loren L.**
Lawless, James G.—*See* **Jewett, Douglas M.**
Lawrance, G. A.—*See* **Jackson, W. G.**
Lay, P. A.—*See* **Jackson, W. G.**
Leisten, J. A.—*See* **Chokotho, N. C.**
Lely, J. A. A simple and accurate gas buret. 358
LeMaster, Nancy. Ideas from the 6th (IDEAS). 67
LeMaster, Nancy, *editor.* What's happening in your part of the country? Southeast. 202, 287, 447, 524, 596, 667, 746, 834, 971
Leonard, Jack E. A practical introduction to separation and purification techniques for the beginning organic chemistry laboratory. 1022
— **Behelfer, Gary,** and **Mohrmann, Leonard D.** Boiling points and small volumes: An apparatus and a method. 1029
Lesiecki, Michael—*See* **Steiner, Richard.**
Letcher, R. M. An undergraduate laboratory program project involving photocyclizations in independent syntheses of novel chrysenes and phenanthrenes. 1020
Letellier, P., Millot, F., Baffier, N., and **Combes, R.** Theory and practical use of an hydrogen electrode in aqueous-organic media. 576
Leung, A. F., So, S. P., and **Li, Wai-Kee.** Molecular term symbols (CEC). 431
Lewis, Barbara B. A report on "Science Teaching and Society" (CURR). 704
Li, Wai-Kee, and **Mak, Thomas C. W.** Huckel orbitals and energies of cyclic phosphonitrillic halides (EXAM). 362
—*See* **Leung, A. F.**
Lie, G. C. Boltzmann distribution and Boltzmann's hypothesis. 603
Linert, W.—*See* **Rechberger, P.**
Lipeles, Enid S. Friedrich August Kekule (PROFILES). 624
Lipschitz, Irving. Integration of major computer program packages into experimental courses: A freshman experience (CS). 796
Lipsky, Sanford. Ionization and excitation in non-polar organic liquids. 93
Long, Joseph W. A microcomputer-controlled gamma scintillation spectrometer (CS). 550
—A novel "digital" buret. 658
Lookhart, G. L. Aid to chromatographers: a simple trap that eliminates bubbles in the solvent intake of high-pressure liquid chromatography pumps. 78
Lower, Stephen K. An audio-tutorial approach to the teaching of physical chemistry and electrochemistry. 773
Lowrey, Jonathan S., Evans, Thomas A., and **Wong, Shan S.** Sterospecificity of NAD+/NADH reactions: A project experiment for advanced undergraduates. 816
Luckenbach, R.—*See* **Sunkel, J.**
Ludi, Andreas. Prussian blue, an inorganic evergreen (TS). 1013
Lunney, David, and **Morrison, Robert C.** High technology laboratory aids for visually handicapped chemistry students. 228
Luo, Y. R. Inequality of decision on species instability. 26

M

Mahoney, Dennis W., Sweeney, Joyce A., Davenport, Derek A., and **Ramette, Richard W.** A continuous variation study of heats of neutralization. 730
—*See* **Sweeney, Joyce A.**
Mak, Thomas C. W.—*See* **Li, Wai-Kee.**
Malott, Sally—*See* **Butler, Sara.**
Mandt, Doug, *editor.* What's happening in your part of the country? Northwest. 287, 447, 524, 667, 834, 971
Mark, Herman. Polymer chemistry in Europe and America—how it all began (CHS). 527
Mark, J. E. Rubber elasticity. 898
Marquaire, P. M.—*See* **Azay, P.**
Marshall, William L. Implementing cultural science in the high schools (CB). 770
Martin, Ned H. Analysis of analgesic mixtures: An organic chemistry experiment. 818
Marvel, C. S. The development of polymer chemistry in America—the early days (CHS). 535
Marzik, James V., Sabatelli, Anthony D., Fitzgerald, Paul J., and **Sarneski, Joseph E.** A study of the kinetics of the substitution reactions of square planar platinum(II) complexes as monitored by conductance measurements. 589
Marzzacco, Charles—*See* **Deckey, George.**
Mattice, Wayne L. Macromolecules in undergraduate physical chemistry. 911
Mattson, Bruce—*See* **Snipp, Robert.**
Matviya, Thomas M. and **Downey, Daniel M.** A computer display of multicomponent fractional distillation curves (CS). 987
Matzek, C.—*See* **Cohen, R.**
McClelland, Alan L., *editor.* Cooperative education. 707
McGrath, J. E. Block and graft copolymers. 914
—Chain reaction polymerization. 844
McGrath, Larry—*See* **Birk, James P.**
McGuffie, Grace Fischer, *editor.* Curriculum report. 191, 314, 488, 639, 704, 1015
McKee, C. S. Temperature and unique energy level populations. 605
McKee, J. R. A practical Solvay process experiment (TF). 1035
McMahon, Terence—*See* **Eliason, Robert.**
McNaught, Ian J. The rotational levels and rotational partition function for $^{16}O_2$ (TF). 719
Mei, Elizabeth H., and **Eyring, Edward M.** A simple photoacoustic microscopy (PAM) experiment. 812
Melnikow, Joy, Keeffe, James R., and **Bernstein, R. L.** Carcinogens and mutagens in the undergraduate laboratory (Safety). A11
Meloan, C. E. Filtering technique: A quantitative evaluation. 73
Menchel, Robert S.—*See* **Gavin, John J.**
Mendelsohn, Richard, and **Monse, Ernst U.** Vibrational spectroscopy of CS_2: A physical chemistry experiment. 582
Mettes, C. T. C. W., Pilot, A., Roossink, H. J., and **Kramers-Pals, H.** Teaching and learning problem solving in science: Part II: Learning problem solving in a thermodynamics course. 51
Meyer, Richard G. Conjugate and nonconjugate reduction with $LiAlH_4$ and $NaBH_4$ (TF). 628
Mickey, Charles, *editor.* Chemical Principles Revisited. 56, 257, 315, 418, 642, 997
Mickey, Charles D. Artistic metalwork and chemical technology (CP). 315
—Separation technology: I. Chromatography (CP). 997
—Solar photovoltaic cells (CP). 418
—Some aspects of coordination chemistry (CP). 257
—Using the equilibrium concept (CP). 56
Mierrzecki, Roman. Dalton's atoms or Dalton's molecules? (SBS). 1006
Miller, Gregory C. Ammonia (CM). 424
—It's beanium!! (50-ME). 507
Miller, Jack M.—*See* **Brindle, Ian D.**
Miller, Jeff W.—*See* **Larson, Olof G.**
Miller, Melvin P. A mechanical analog of surface pressure. 197
Millot, F.—*See* **Letellier, P.**
Mohrmann, Leonard D.—*See* **Leonard, Jack E.**
Monse, Ernst U.—*See* **Mendelsohn, Richard.**
Monts, David L., and **Pickering, Miles.** Motivational impact of bonus system grading. 43
—Effect of TA background on student laboratory achievement. 768
Mooiman, M. B.—*See* **Orchard, S. W.**
Moomaw, William R.—*See* **Kavanaugh, Robert D.**
Moore John T., Cates, Charles R., and **Garrett, James M.** Classical demonstrations performed to a new beat. 635
—*See* **Cates, Charles R.**
—and **Blair, Waymons.** A rolling laboratory platform for the mobility handicapped. 221
Moore, John W. Copyrights and chemists. 38
—*See* **Johnson, Jeffrey K.**
Moore, John W., *editor.* Computer series. 46, 177, 239, 337, 405, 470, 549, 646, 690, 796, 987
Morris, Allan J.—*See* **Suelter, Clarence H.**
Morris, Jill L.—*See* **Davis, Michael.**
Morris, Michael D.—*See* **Dien, Kathy J.**
Morrison, Robert C.—*See* **Lunney, David.**
Mottola, Horacio A. Some kinetic aspects relevant to contemporary analytical chemistry. 399
Mowery, Dwight Ray. A rubber reflux condenser for a test tube. 357
Mueller, Sr., M. Casimira. Origin and development of cooperative education at Thomas More College (CE). 707
Mueller, William J. Equilibrium demonstration and linear data plotting. (CS). 987
Muha, G. M. Activity corrections in acid/base and precipitation titration curve calculations (CS). 242
Munn, R. J., Stewart, J. M., Pagoaga, M. Katherine, and **Munn, Timothy C. I.** OPTSCAN and GRADE—Automated grading and record keeping (CS). 694

Munn, Timothy C. I.—*See* **Munn, R. J.**
Murdoch, Joseph R. What is the rate-limiting step of a multistep reaction? 32
Murphy, William S. Organic stereochemistry: An undergraduate exercise with molecular models. 504
Myers, Thomas R. Rules for coordination number of metal ions (CEC). 681

N

Nagel, Miriam C., *editor.* Profiles in chemistry. 60, 273, 305, 789
Nagel, Miriam C., *editor.* Safety tips. 654, 825, 1018
Nagel, Miriam C. Chemical waste disposal (ST). 825
—Dr. Thomas Midgley: "From the periodic table to production" (PROFILES). 496
—Herman Frasch, sulfur king (PROFILES). 60
—Inventory controls (ST). 1018
—Plan for Safety (ST). 654
—Sir William Henry Perkin, pioneer in color (PROFILES). 305
Nash, Leonard K. Ice point and triple point. 975
Nathan, Lawrence C.—*See* **Rosenthal, Lois C.**
Naylor, Robert W. A physical model to demonstrate acid-base conjugate pairs (TD). 1017
Neff, Thomas R. Chemistry and the modern prospector (CHEM I). 699
Nelson, Samuel L.—*See* **James, Helen J.**
Neta, P. Redox properties of free radicals. 110
Nienhouse, Everett J.—*See* **Larson Olof G.**
Niewahner, J. H. Notation for order of addition. 461
Noble, Mark E.—*See* **Archer, Leonard J.**

O

O'Connor, Rod, *editor.* Brain tinglers. 66, 435, 502, 567, 638, 726, 795, 962, 994
O'Connor, Rod. Bad booze (TING). 502
—"Water, water everywhere, nor any drop to drink." (TING). 726
O'Leary, Jr., Gerard P.—*See* **Belliveau, James F.**
Olabisi, Olagoke. Interpretations of polymer-polymer miscibility. 944
Olesen, B., Pinnick, Jr., H. R., and Dunlap, R. Detector power supply for a Carle basic TM model 6500 gas chromatograph. 595
Orchard, S. W., and **Mooiman, M. B.** Simulation of first-order kinetic mechanisms (CS). 409
Orna, Mary Virginia, O. S. U., *editor.* Thumbnail sketches. 423, 508, 633, 793, 1013.
Orna, Mary Virginia, O. S. U. Educational absorption spectra kit (AR). 965
Owen, G. Scott, Travis, Deborah, and **Green, Terry.** Interfacing an Apple II microcomputer to a UV-visible spectrophotometer (CS). 690

P

Pacey, Phillip D. Changing conceptions of activation energy. 612
Pagoaga, M. Katherine.—*See* **Munn, R. J.**
Palmer, Glenn E. Computer-based integration of fact and theory in introductory chemistry (CS). 48
—PMR spectroscopy on a PET (CS). 692
—Computer applications in the freshman laboratory. 995
Pape, Walter. More on the common ion effect. 1019
Parmer, Swarn Singh. The crystal field stabilization energy (CFSE) (TF). 1035
Pate, Charles B., and **Herman, Harvey B.** An inexpensive microcomputer-based data system for liquid and gas chromatography (CS). 244
Peake, Barrie M., and **Grauwmeijer, Roger.** A simple Huckel molecular orbital computer program written in BASIC for microcomputer use (CS). 692
Pearson, Ralph G. Orbital topology and reaction mechanisms. 753
Pearson, T. D. L., Greer, M. J. and **Demas, J. N.** Preparation of posters and overhead transparences (CS). 691
Pedersen, Lori A.—*See* **Gaus, P. L.**
Perez, S.—*See* **Dheu, M. L.**
Perkins, Robert R. Pressure and the exploding beverage container (EXAM). 363
—An illustration of applied calorimetry—dieting students (CEC). 548
Perlmutter, Samuel H. Teaching a full year's chemistry course in a six weeks' summer session (VIEW). 562
Pernicone, Eileen. Method for balancing redox reactions containing hydroxyl ions (IDEAS). 966
Perona, M. J.—*See* **Burt, J. T.**
Perugini, D.—*See* **Cervellati, R.**
Phillips, Donald B. A plan for establishing and maintaining the high school-college communication pipeline. 632
Pickering, Miles, and **Crabtree, Robert H.** Protein denaturation: A physical chemistry project lab. 513
—*See* **Monts, David L.**
Pike, Ronald M.—*See* **Currie, Jr., James T.**
Pilar, Frank L. "Plus" and "minus" states of linear molecules. 758
—Damn the permanganate volcanoes: Full principles ahead! (PO). 803
Pilot, A.—*See* **Mettes, C. T. C.W.**
Pinnick, Jr., H. R.—*See* **Olesen, B.**
Platt, Steven G., and **Campbell, Donald E.** A recorder-activated double set-point process controller. 583
Pommier, P.—*See* **Azay, P.**
Powers, George B. A practical chemistry course (CURR). 1015
Preston, J. High-strength/high-modulus fibers from aromatic polymers. 935
Provencher, G. M. The fast-flow discharge reactor as an undergraduate instructional tool. 1024
Pujol, Phillipe—*See* **Blaise, Paul.**

Q

Quickenden, Terry I. How hazardous is synthetic chemistry? (PO). 503
Quiring, Frank S., *editor.* A place for chemists. 268, 494
Quirk, Roderic P. Stereochemistry and macromolecules: Principles and applications. 540

R

Ramani, K., and **Ghodgaonkar, A. M.** Computation of dissociation energies of diatomic molecules. 609
Ramette, Richard W.—*See* **Mahoney, Dennis W.**
Ratzlaff, Kenneth L. Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and Apple microcomputers (CS). 470
Rechberger, P., and **Linert, W.** Complete conductance equation of 1-1 electrolytes and the programmable TI 59 calculator (CS). 245
Redpath, Leslie J. Free radical reactions with simple biochemical systems. 131
Reeves, William J.—*See* **Labianca, Dominick A.**
Reichardt, Paul B.—*See* **Hoskins, Claron L.**
Reinsborough, Vincent C., and **Robinson, Brian H.** A convenient stopped-flow experiment: Demonstrating the influence of micelles on reaction kinetics. 586
Renfrew, Malcolm M., *editor.* Safety in the chemical laboratory. A45, A93, A133, A257, A289, A000
Richardson, Mary F.—*See* **Brindle, Ian D.**
Richardson, Shirley E. Individualized instruction in chemistry is possible (VIEW). 1007
Rioux, Frank. Using microcomputer graphics to teach quantum theory (CS). 553
—*See* **Harriss, Donald K.**
Ristow, A. R.—*See* **Burt, J. T.**
Robinson, Brian, H.—*See* **Reinsborough, Vincent C.**
Rockwell, Dale L.—*See* **Gavin, John J.**
Rodrigo, M.—*See* **Garcia-Mateos, I.**
Rodriguez, L. J.—*See* **Garcia-Mateos, I.**
Roossink, H. J.—*See* **Mettes, C. T. C. W.**
Rosenberg, Milton H. More quickies (TING). 994
—Small things and large numbers (TING). 962
Rosen, Sidney. Charles W. Eliot: Chemist and teacher (PROFILES). 1005
Rosenthal, Lois C., and **Nathan, Lawrence C.** A conductimetric-potentiometric titration for an advanced laboratory. 656
Rothchild, Robert. Efficiency of orbital overtap: Visual demonstration. 757
Rouse, John P. Chemistry basic learning objectives. 714
Rubba, Peter A. Chemistry's teachers' inservice needs: Are they unique? 430
Rusch, Peter F. Introduction to chemical information storage and retrieval (CS). 337
Rybolt, Thomas R. A. A virial treatment of the Joule and Joule-Thomson coefficients. 620

S

Sabatelli, Anthony D.—*See* **Marzik, James V.**
Sacks, Irene and **Hague, Jr., George R.** Chemistry day 1980 (COUNTRY). 445
Saltzman, Max—*See* Billmeyer, Jr., Fred W.
Salzsieder, John C. Entropy as a driving force (TD). 280
Sandel, Bonnie Burns, and **Solomon, Robert W.** Organic synthesis design and the computer (CS). 798
Sannigrahi, A. B.—*See* **Das, Ranjan.**
Sargeson, A. M.—*See* **Jackson, W. G.**
Sarneski, Joseph E.—*See* **Marzik, James V.**
Sarquis, Mickey. Biennial—truly an interface. 61
—*See* **Taylor, Harriet.**
—The advantages of becoming a reviewer: A first step in publishing. 575
Scacchi, G.—*See* **Azay, P.**
Schlosser, S.—*See* **Cohen, R.**
Schmuckler, Joseph S., *editor.* Something new from the past. 62, 183, 276, 326, 404, 497, 637, 721, 792, 959, 1016
Schultz, Ethel L., *editor.* Opportunities in continuing education. 189, 427
Schultz, Ethel L. Report from the Member-at-Large (DIVCHED). 455

Schwankner, R., Eiswirth, M. and **Venghaus, H.** Luminescent processes elucidated by simple experiments on ZnS. 806
Schwartz, Lowell M. A statistcal note on the time lag method for second-order kinetic rate constants. 588
—More on effects controlling carboxylic acidity (TF). 778
Schwartz, Truman A. Admitting ambiguity (PO). 334
Schwarz, Harold A. Free radicals generated by radiolysis of aqueous solutions. 101
Seely Jr., Oliver—*See* Johnson, Jeffrey K.
Sell, Duane, *editor.* View from my classroom. 63, 198, 562, 711, 794, 960, 1007
Sellers, Robin M. Metal ions in unusual valency states. 114
Sen, Buddhadev. An alternative viewpoint on energy options (PO). 19
Senogles, E.—*See* **Bulmer, R. S.**
Sequin-Frey, Margareta. The chemistry of plant and animal dyes. 301
Sevilla, Michael D. Electron spin resonance of radiation produced free radicals. 106
Shakhashiri, Bassam Z. Message from the chairman (DIVCHED). 25
—and **Gardner, Marjorie H.** United States to host International Chemical Education Conference. 451
—**Williams, Lloyd G., Dirreen, Glen E.,** and **Francis, Ann.** "Cool-Light" Chemiluminescence (TD). 70
Shallenberger, Robert S., Wrolstad, Ronald E., and **Kerschner, Laurie E.** Calculation and specification of the multiple chirality displayed by sugar pyranoid ring structures. 599
Shapira, Gary, and **Justice, Jr., Joseph B.** Computer-assisted instruction in general chemistry (CS). 694
Sharpless, Nansie S.—*See* **Gavin, John J.**
Shaw, III., Frank C. Resonance fluorescence and resonance Raman spectroscopy of bromine and iodine vapor. 343
Siebring, B. R. A report of the task force on the teaching of chemistry: Unique courses. 481
Sievers, Dennis. An inexpensive pH meter (IF). 281
Silberman, Robert G. Problems with chemistry problems: Student perception and suggestions. 1036
Silberstein, Judith—*See* **Ben-Zvi, Ruth**
Silverman, Joseph. Radiation processing: The industrial applications of radiation chemistry. 168
Simic, Michael G. Free radical mechanisms in autoxidation processes. 125
Sisler, Harry H. Water—What's really peculiar? (L). 448
Skinner, James F. A simple demonstration of cathodic protection (TD). 802
—Red cabbage and the electrolysis of water (TD). 1017
Slabaugh, Michael R., *editor.* Chem I supplement. 185, 465, 544, 699
Smith, B. V.—*See* **Barnard, P. W. C.**
Smith, Deborah. Teaching aids for visually handicapped students in introductory chemistry courses. 226
Smith, Douglas D., *editor.* Ideas from everywhere. 67, 278, 426, 574, 966
Smith, Jerry L. Secondary school utilization of community colleges as learning resource center. 776
Smith, Judy. Hydrates: Test tube or crucible? (IDEAS). 966
Smith, Wayne L.—*See* **Ward, Charles R.**
Snell, K. D., Braun, Jr., C. V., and Keenan, A. G. A comprehensive computer program system for an undergraduate physical chemistry laboratory (CS). 551
Snipp, Robert, Mattson, Bruce, and Hardy, Winters. Spectacular gas density demonstration using methane bubbles (TD). 354
Snyder, Jonathan—*See* **Bozzelli, Joseph W.**
So, S. P.—*See* **Leung, A. F.**
Solomon, Robert W.—*See* **Sandel, Bonnie Burns.**
Spencer, James N., and **Yoder, Claude H.** A survey of undergraduate research over the past decade. 780
Spooner, Douglas W.—*See* **Joshi, Bhairav D.**
St. Pierre, L. E.—*See* **Cunningham, Cindy C.**
Stapleton, George W. "The Dancing Wu Li Masters" (IDEAS). 574
Steenkamp, P. J., and **Gonsalves, J. W.** The symmetry-based equivalence between the crystal-field and angular-overlap models as applied to some planar, pyramidal and cubic symmetries. 380
Steere, Norman V.—*See* **Swanson, Barrett Anne.**
Steffel, Margaret J. Cyclohexane as a cryoscopic solvent (SAFETY). A133
Steiner, Richard, and **Lesiecki, Michael.** Creating a working relationship between universities and high schools. 493
Stewart, J. M.—*See* **Munn, R. J.**
Stille, J. K. Step-growth polymerization. 862
Stock, John T., and **Larson, R. E.** Demonstration of multiplexing in instrument readout displays (CS). 987
Stolzberg, Richard J. "And from the slope of the line we calculate . . .". 710
—*See* **Hoskins, Claron, L.**
Stone, Helen M. Lead (CM). 722
Streitberger, Eric, *editor.* What's happening in your part of the country? Southwest. 202, 288, 596, 834, 971
Suelter, Clarence H., and **Hill, Don.** Simulation of chemical and enzyme kinetics experiments (CS). 987
—and **Morris, Allan J.** Scintillation spectrometry: Microcomputer simulation (CS). 987
Suits, Robert, *editor.* What's happening in your part of the country? Northcentral. 288, 447, 524, 834
Sunkel, J., Hoffman, E., and **Luckenbach, R.** Straighforward procedure for locating chemical compounds in the Beilstein handbook. 982
Swanson, Anne Barrett, and **Steere, Norman V.** Safety considerations for physically handicapped individuals in the chemistry laboratory. 234
—*See* **Blumenkopf, Todd A.**
Sweeney, Joyce A., Mahoney, Dennis W., and **Davenport, Derek A.** Recycling analytical samples. 742
—*See* **Mahoney, Dennis W.**

T

Tarbell, A. T., and **Tarbell, D. S.** The ACS in San Francisco, 1910 (SBS). 626
Tarbell, D. S., and **Tarbell, A. T. R. B.** Warder and the kinetics of saponification (SBS). 599
—and **Hamilton, J. H.** An early report on the physiological effects of X-rays (SBS). 275
Tardy, Dwight C. Laboratory simulations that include experimental error (CS). 407
Taub, Irwin A. Radiation chemistry and the radiation preservation of food. 162
Taylor, Harriet V. Conservation energy (CHEM I). 185
—and **Sarquis, Mickey.** 1st annual workshop at the interface of high school and college chemistry. 266
Taylor, Max A.—*See* **Bricker, Clark E.**
Tellinghuisen, Joel. Laser-induced molecular fluorescence: A physical chemistry experiment. 438
Terezakis, Emmanuel G. The role of chemistry in firefighting (JOULES). 698
Thall, Edwin. Recycling silver chloride. 561
Thayer, John S. Controlled release applications of organometals. 764
Thomas, J. K., and **Chen, T. S.** Radiation chemistry in organized assemblies. 140
Thomas, R. A.—*See* **Bulmer, R. S.**
Thompson, Bruce M., and **Kessick, Michael A.** On the preparation of buffer solutions. 743
Tierney, John and **Dalton, David R.** A homemade, high pressure gas cell. 813
Tipton, Tom, *editor.* Learning activities. 476, 634
Tombaugh, Dorothy. Chemistry and the visually impaired: Available teaching aids. 222
Toree, Alicia—*See* **Lain, Luis.**
Traeger, John C. A microprocessor-simulated mass spectrometer (CS). 411
—Microcomputer-controlled flash photolysis experiment (CS). 987
Travis, Deborah—*See* **Owen, G. Scott.**
Trimble, R. F. Mendeleev's discovery of the periodic law. (SBS). 28

V

van Spronsen, Jan W. Mendeleev as a speculator (SBS). 790
Van Willis, W.—*See* **Johnson, Jeffrey K.**
Velazquez, M. M.—*See* **Garcia-Mateos, I.**
Venanzi, Thomas J. Some unusual properties of carbon monoxide: A comparison with N2 (TS). 423
Venghaus, H.—*See* **Schwankner, R.**
Violino, Paolo, and **Di Giacomo, Beatrice Semino.** An investigation of Piagetian stages in Italian secondary school students (CURR). 639
Vitz, Edward W. The ferrioxalate actinometer: A lecture demonstration (TD). 655
Vogel, George. Commentary on countercurrent distribution program (CS). 696

W

Ward, Chares R. Another view of significant figures. 616
—and **Greenbowe, Thomas J.** Cathodic protection: An overhead projector demonstration (TD). 505
Ward, John F. Radiolytic damage to genetic material. 135
Ward, Thomas Carl. Molecular weight and molecular weight distributions in synthetic polymers. 867
Warren, Jr., F. Vincent—*See* **Delaney, Michael F.**
Waterman, Edward L. An annotated Asimov: A resource bibliography for chemistry teachers. 826
Webb, Michael J. An experimental introduction to stoichiometry (50-ME). 192
Weber, Robert L. Humorous anecdotes sought (L). 288
Webster, M. An introduction to X-ray crystallography—two computer programs (CS). 555
Weerasooriya, Ranjini. Chemical equations, moles, and stoichiometry (PAST). 792
Weisman, Renee L. A mathematics readiness test for prospective chemistry students. 564
Weiss, Sheshana—*See* **Zoller, Uri**

Werner, Anthony. Synthetic materials in art conservation. 321
West, Kenneth, and **Flath, Patricia.** A computer program to calculate alkalinity via Gran's plot method (CS). 555
Wheeler, S. J., James D. Think (PO). 1004
Whitburn, Kevin D.—*See* **Hoffman, Morton Z.**
White, Alvan D. Be a millionaire—get with the action! (AA). 645
—Entropy rules in my class too! (AA). 645
—Let's get the heck out of here! (AA). 645
—Oxidation and reduction (AA). 645
White, J. Edmund. Project TEACH supplemented. 766
Whitmer, John C. Demonstrating tetrahedral bonding using soap films (TD). 280
—*See* **Cohen, Richard W.**
Wiger, George, *editor.* Textbook forum. 359, 628, 719, 778
Wiger, George, and **Dutton, Melvin L. A.** A lecture demonstration model of the quantum mechanical atom (TD). 801
Wilkes, G. L. An overview of the basic rheological behavior of polymer fluids with an emphasis on polymer melts. 880
Wilkinson, D. E.—*See* **Burt, J. T.**
Willeford, Jr., Bennett R.—*See* **Armstrong, William H.**
Williams, J. M. The detection of small amounts of anthracene in triptycene by HPLC. 1003
Williams, Lloyd G.—*See* **Shakhashiri, Bassam Z.**
Willis, Christropher J. Another approach to titration curves: Which is the dependent variable? 659
Willis, Clive. Ion-molecule reactions in gas phase radiation chemistry. 88
Wilson, Katherine B.—*See* **Kane, Stephen M.**
Windbigler, Jerrol. The radiation hazard of coal-fired power plants. 500
Winn, John S. Analytic potential functions for diatomic molecules: some limitations. 37
Wiseman, Jr., Frank L. The teaching of college chemistry: Role of student development level. 484
Wittcoff, Harold and **Fernelius, W. Conard,** *editors.* Real world of industrial chemistry. 270, 432, 557
Wittcoff, Harold. Benzene—the polymer former (IND). 270
Wolf, Walter A., *editor.* Chem ed compacts. 431, 548, 681
Wong, Shan S.—*See* **Lowrey, Jonathan S.**
Wood, William F. *p*-Chlorophenoxyacetic acid—preparation of a synthetic plant hormone. 76
—and **Kent, Craig D.** QUEST: CAIDI programs to set up and use question-and-answer exercises (CS). 47
Woodin, Terry S.—*See* **Beaulieu, Patrick L.**
Workman, Harry J.—*See* **Gray, Jr., Edward T.**
Wotiz, John H., *editor:* Story behind the story. 28, 275, 364, 559, 626, 790, 1006
Wotiz, John A. A history of chemistry center. 415
Wrolstad, Ronald E.—*See* **Shallenberger, Robert S.**

Y

Yoder, Claude H.—*See* **Spencer, James N.**
Young, Jay A. Scinece and the fine arts (CB). 329
—Symposium on the contemporary chemical industry and chemical education: A report (IND). 432

Z

Zamora, Edgardo—*See* **Bishop, Marvin.**
Zanella, Andrew W.—*See* **Pinnell, Robert P.**
Zemke, Warren T. Selected bibliography of computer programs in chemical education (CS). 50
Zimelis, John. What is expected from high school chemistry by selected college chemistry instructors (CURR). 488
Zoller, Uri, and **Weiss, Shoshana.** Hashish and marijunua: Chemistry in the social service curriculum. 42
Zubrick, J. W.—*See* **Bailey, R. A.**
Zuczek, Norbert M, and **Furth, Paul S.** Oxidation of cyclohexanol to cyclohexanone by sodium hypochlorite. 824

Subject Index

A

A Place For Chemists. edited by Frank S. Quiring
Career choice: Chemist or chemical engineer. **Don Holt.** 494
The industrial research chemist. **E. J. Griffith.** 268
Accurate air sampling pump, An inexpensive. **Paul Friedman.** 199
Acid-base conjugate pairs, A physical model to demonstrate (EXAM). **Robert W. Naylor.** 1017
Acid-base equilibria on a pocket calculator, A comprehensive treatment of (CS). **Brian W. Clare.** 555
Acid catalysis: A flexible experiment, adaptable to student ability and various teaching approaches, General. **R. S. Bulmer, E. Sengogles** and **R. A. Thomas.** 738
Acid electrochemically, Sebasic acid from adipic (IN). **Kenneth E. Kolb.** 558
ACS in San Francisco, 1910, The (SBS). **A. T. Tarbell** and **D. S. Tarbell.** 626
Activation energy, Changing conceptions of. **Philip D. Pacey.** 612
Activity corrections in acid/base and precipitation titration curve calculations (CS). **G. M. Muha.** 242
Addition and elimination reactions clarified through the Hellmann-Feynman theorem, The driving force of. **Paul Blaise, Philippe Pujol** and **Olivier Henri-Rousseau.** 615
Administration of a cooperative education program: The art of coordination (CE). **Stephen M. Kane** and **Katherine B. Wilson.** 499
Admitting ambiguity (PO). **A. Truman Schwartz.** 334
Air, A general chemistry experiment for the determination of the oxygen content of. **James P. Birk, Larry McGrath** and **S. Kay Gunter.** 804
Alternative viewpoint on energy options (PO). **Buddhadev Sen.** 19
Ambiguity, Admitting (PO). **A. Truman Schwartz.** 334
America—the early days, The development of polymer chemistry in (CHS). **C. S. Marvel.** 535
Ammonia (CM). **Gregory C. Miller.** 424
Ammonia fountain, A white. **Charles R. Cates** and **John T. Moore.** 498
Amperometric determination of phenol bromination kinetics. **R. Cohen, C. Matzek, S. Schlosser** and **C. O. Huber.** 823
Analysis of analgesic mixtures: An organic chemistry experiment. **Ned H. Martin.** 818
Analysis, Sequential decision-making process under conditions of uncertainty in drug. **Ik-Whan Kwon** and **Joe H. Kim.** 462
Analytical Chemistry
Activity corrections in acid/base and precipitation titration curve calculations (CS). 242
Conductimetric-potentiometric titration for an advanced laboratory. 656
Countercurrent distribution with simple equipment. 814
Determination of the extraction constant for zinc pyrrolidinecarbodithioate: An atomic absorption experiment for instrumental analysis. 580
Filtering technique: A quantitative evaluation. 73
Gas chromatograph/microcomputer interface using the general-purpose interface bus (CS). 243
Identification of organic colorants in art objects by solution spectrophotometry: Pigments. 307
Instrument/computer interface (CS). 549
Method for preparing solid compounds for infrared analysis. 80
Microcomputer-based data system for liquid and gas chromatography (CS). 244
Microcomputer-controlled gamma scintillation spectrometer (CS). 550
Microcomputer-simulated acid-base titration (CS). 48
Microcomputer simulation of lab instruments (CS). 410
Notation confusion in volume ratio dilution. 740
On the preparation of buffer solutions. 743
Photoacoustic microscopy (PAM) experiment. 812
Transfer flask for quantitative analysis. 353
Vinyl acetate content of packaging film: A quantitative infrared experiment. 741
Analytical chemistry, Some kinetic aspects relevant to contemporary. **Horacio A. Mottola.** 399
Analytical samples, Recyling. **Joyce A. Sweeney, Dennis W. Mahoney** and **Derek A. Davenport.** 742
Angular-overlap models as applied to some planar, pyramidal and cubic symmetries, The symmetry-based equivalence between the crystal-field and. **P. J. Steenkamp** and **J. W. Gonsalves.** 380
Animal dyes, The chemistry of plant and. **Margareta Sequin-Frey.** 301
Annotated Asimov: A resource bibliography for chemistry teachers, An. **Edward L. Waterman.** 826
Anomalies in the periodic table. **F. H. Firsching.** 478
Apes and peacocks too: A report to an academy. **Derek A. Davenport.** 671
Apparatus Review. edited by **David L. Byrum**
Apparatus Review Form. 437, 668
Fire syringe. 668
Introducing the column and its editor. 437
QA(quantitative analysis) spectroscope. 668
Apparatus
Air sampling pump. 199
Balloons as lab aids. 44
Capillary flow meter. 522
Countercurrent distribution with simple equipment. 814
Detector power supply for a Carle Basic TM Model 6500 gas chromatograph. 595
Digital buret. 658
Gas buret. 358
Homemade, high pressure gas cell. 813
Hydrogen electrons in aqueous-organic media. 576
Interfacing an Apple II microcomputer to a UV-visible spectrophotometer (CS). 690
Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and Apple microcomputers (CS). 470
Microcomputer-controlled gamma scintillation spectrometer (CS). 550
pH meter (IF). 281
Pipet delivery device. 663
Recorder-activated double set-point process controller. 583
Rubber reflux condenser for a test tube. 357
Solution calorimeter and thermistor bridge for undergraduate laboratories. 732
Source of distilled water for science laboratories in the humid tropics. 788
Timed constant current source for calorimeter calibration. 594
Transfer flask for quantitative analysis. 353
Trap to eliminate bubbles in high-pressure liquid chromatography pumps. 78
Versatile and inexpensive instrument/computer interface (CS). 549
Versatile oven with very little thermal inertia. 441
Versatile pipet bulb. 733
Apple II microcomputer to a UV-visible spectrophotometer, Interfacing an (CS). **G. Scott Owen, Deborah Travis** and **Terry Green.** 690
Apple microcomputers, Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and (CS). Kenneth L. Ratzlaff. 470
Application of the TRS-80 in the classroom and the laboratory (CS). **Edward T. Gray, Jr.** and **Harry J. Workman.** 239
Applications and Analogies. edited by **Ron DeLorenzo.**
A Moire pattern analogy to electron motion. **James R. Bard.** 480
Be a millionaire—get with the action! **Alvan D. White.** 645
Chemical wastes and the law of conservation of matter. **John W. Hill.** 996
Entropy rules in my class too! **Alvan D. White.** 645
Freeze-proof bugs. **Ronald DeLorenzo.** 787
Growing concrete. **Ronald DeLorenzo.** 787
Let's get the heck out of here! **Alvan D. White.** 645
Neutrography: particles versus waves. **Ronald DeLorenzo.** 327
Oxidation and reduction. **Alvan D. White.** 645
The fruit basket analogy. **William Bleam, Jr.** 184
Weight-loss diets and the law of conservation of energy. **John W. Hill.** 996
Why oatmeal sticks to your ribs. **Ronald DeLorenzo.** 787
Arousing student interest through thirty-five years of changes in chemistry (VIEW). **Keith Hunnings** and **Lyndall Hunnings.** 63
Art, The chemistry of—A sequel (special April issue)
A dialogue concerning the two chief world systems: Art and science (CB). **Henry A. Bent.** 329
A short history of the chemistry of painting. **Harriet G. Friedstein.** 291
Artistic metalwork and chemical technology (CP). **Charles D. Mickey.** 315
Chemistry and art (PAST). **Joseph S. Schmuckler.** 326
Chemistry that's exotic and practical (CURR). **Grace Fischer McGuffie.** 314
Hypo-hydrated sodium thiosulfate (CM). **Darrell Beach.** 325
Identification of organic colorants in art objects by solution spectrophotometry. **Fred W. Billmeyer, Romesh Kumar,** and **Max Saltzman.** 307
Neutrography: particles versus waves (AA). **Ronald DeLorenzo.** 327
Science and the fine arts (CB). **Jay A. Young.** 329
Sir Henry Perkin, pioneer in color (PROFILES). **Miriam C. Nagel.** 305
Synthetic materials in art conservation. **Anthony Werner.** 321
Textile chemistry for the artist. **Sara Butler** and **Sally Mallot.** 295
The chemistry of art (PAST). **Joseph S. Schmuckler.** 326

The chemistry of plant and animal dyes. **Margareta Sequin-Frey.** 301
Asbestos, Replacement for (IN). **W. Conard Fernelius.** 558
Asbestos fiber hazard from wire gauzes, Evaluation of (SAFETY). **Billy J. Yager.** A134
Asimov: A resource bibliography for chemistry teachers, An annotated. **Edward L. Waterman.** 826
Atomic absorption experiment for instrumental analysis, Determination of the extraction constant for zinc pyrrolidinecarbodithioate: An. **L. Claron Hoskins, Paul B. Reichardt,** and **Richard J. Stolzberg.** 580
Atomic absorption in vitamin-mineral tablets, Determination of iron by. **Robert P. Pinnell** and **Andrew W. Zanella.** 444
Atomic coefficients in the π molecular orbitals of butadiene, An intuitive approach to the relative magnitude of the. **Belkacem Boulil, Paul Blaise,** and **Olivier Henri-Rousseau.** 29
Atomic orbital concept by Italian high school students, The understanding of the. **R. Cervellati** and **D. Perugini.** 568
Attitudinal barriers for the physically handicapped. **G. A. Crosby.** 205
Audio-tutorial approach to the teaching of physical chemistry and electrochemistry, An. **Stephen K. Lower.** 773
Audit of the academic chemistry laboratory, Guidelines for a complete safety (SAFETY). **Safety Committee of the New York Section of the American Chemical Society.** A361
Autoxidation processes, Free radical mechanisms in (Radiation Chemistry-State of the Art). **Michael G. Simic.** 125
AV Review. edited by **Harriet Friedstein**
Another dimension. 747
Bibliography of AV materials. 826, 1030
Bibliography of ACS audio cassettes. 572
Chemical symbols, formulas and equations. 65
Chemistry: A basic approach. **Bob Atkins.** 277
Free film loan service. 66
Introduction to chemical nomenclature. 414
Man and molecules. 65
Radioactivity and nuclear reactions. 413
Student molecular model kit. **Bob Atkins.** 278
The properties of an ionic compound. 66
Avogadro's number (or how small are atoms, molecules and ions), How big is (TS). **John E. Fulkrod.** 508
Awards
ACS award in chemical education address. 671
1981 CMA Award recipients. 602

B

Bad booze (TING). **Rod O'Connor.** 502
Balancing complex redox equations by inspection (CP). **Doris Kolb.** 642
Balloons and the teaching of chemistry. **F. Dewhurst** and **F. R. Dewhurst.** 44
Base-catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment. **W. G. Jackson, G. A. Lawrence, P. A. Lay** and **A. M. Sargeson.** 734
Basic learning objectives, Chemistry. **John P. Rouse.** 714
Basic skills for chemistry: A pre-chemistry course (JOULES). **Ralph R. Kreiser.** 636
BASIC version of the stiffly stable, gear numerical integrator (CS). **Richard J. Field.** 408
Beanium!!, It's (50MIN). **Gregory C. Miller.** 507
Benzene ring, Kathleen Lonsdale and the planarity of the (SBS). **Maureen M. Julian.** 365
Benzene—the polymer former (IND). **Harold Wittcoff.** 270
Bibliography for chemistry teachers, An annotated Asimov: A resource. **Edward L. Waterman.** 826
Bibliography of AV materials (AV). **Harriet Friedstein.** 826
Bibliography of computer programs in chemical education, Selected (CS). **Warren T. Zemke.** 50
Biennial—truely an interface. **Mickey Sarquis.** 61
Bio-organic mechanisms: II: Chemoreception. **Lloyd N. Ferguson.** 456
Biochemical systems, Free radical reactions with simple (Radiation Chemistry—State of the Art). **J. Leslie Redpath.** 131
Biochemistry of the muscle contraction process: An undergraduate laboratory experiment using viscosity to follow the progress of a reaction, The. **James F. Belliveau, Gerard P. O'Leary, Jr.,** and **Harry Hajian.** 442
Biochemistry
Chemicals from wood and other biomass. 465, 544
Chemistry of plant and animal dyes. 301
Controlled release applications of organometals. 764
Effects of ionizing radiation on mammalian cells (Radiation Chemistry-State of the Art). 144
Hemoglobin experiments. 75
On the preparation of buffer solution. 743
Preparation of a synthetic plant hormone. 76
Protein denaturation: A physical chemistry project lab. 513
Radiation chemistry and the radiation preservation of food (Radiation Chemistry—State of the Art). 162
Radiation sensitization in cancer therapy (Radiation Chemistry—State of the Art). 156
Recorder-activated, double set-point process controller. 583
Separation of glycohemoglobins by ion exchange chromatography: An undergraduate biochemistry laboratory experiment. 77
Simplified derivations of the Stokes and Einstein equations. 250
Stereospecificity of NAD^+/NADH reactions: A project experiment for advanced undergraduates. 816
Use of ceramic magnets to visualize sequences of peptides, proteins and nucleic acids. 72
Biomass: Chemicals from wood and other (CHEM I). **David W. Goheen**
Part I: Future supply of organic chemicals. 465
Part II: The chemistry of conversion. 544
Bohr model of the hydrogen atom, centrifugal force and the (TF). **Blanca L. Haendler.** 719
Boltzman distribution and Boltzmann's hypothesis. **G. C. Lie.** 603
Bonds so rare in nature?, Why are S-N. **Michael Davis** and **Jill L. Morris.** 760
Booze, Bad (TING). **Rod O'Connor.** 502
Brain Tinglers. edited by **Rod O'Connor**
Bad booze. 502
Hard rock. **H. I. Feinstein.** 435
Holey crystals! **H. I. Feinstein.** 638
More quickies. **Milton H. Rosenberg.** 994
Setting high standards. **H. I. Feinstein.** 567
Snowed in (TING). **Roy D. Caton, Jr.** 66
Superlative problems. **Hugh A. Akers** and **Gwyn E. Akers.** 795
Water, water everywhere, nor any drop to drink. 726
Bromine and iodine vapor, Resonance fluorescence and resonance raman spectroscopy of. **C. Frank Shaw, III.** 343
Buffer solutions, On the preparation of. **Bruce M. Thomson** and **Michael A. Kessick.** 743
Building a periodic table (LA). **Linda S. Fowler.** 634
Buret, A novel digital. **Joseph W. Long.** 658
Buret, A simple and accurate gas. **J. A. Lely.** 358

C

Cabbage and the electrolysis of water, Red (TD). **James F. Skinner.** 1017
CAIQOA: Computer-assisted instrumental-qualitative organic analysis. **James T. Currie** and **Ronald M. Pike.** 46
Calculation and specification of the multiple chirality displayed by sugar pyranoid ring structures. **Robert S. Shallenberger, Ronald E. Wrolstad** and **Laurie E. Kerschner.** 599
Calculator, A comprehensive treatment of acid-base equilibria on a pocket (CS). **Brian W. Clare.** 555
Calculator, Analysis of student laboratory data: An illustration of the usefulness of an inexpensive programmable pocket. **Thomas P. Chirpick.** 436
Calculator, Complete conductance equation of 1-1 electrolytes and the programmable TI 59 (CS). **P. Rechberger** and **W. Linert.** 245
Calculator program, Molecular parameters of diatomic molecules: A programmable. **Jose Miguel Gallego Garcia.** 610
Calculators and standard deviation (CS). **Randolph Bruce Huff** and **Kenneth Nolon Carter.** 49
Calculators, Non-linear least-squares optimization of parameters for first-order kinetics on programmable (CS). **Domenico De Marco, Athos Bellomo** and **Alessandro De Robertis.** 696
Calculators, Use of a photocopied slide rule to complement limited function. **Paul M. Barelski.** 718
Calorimeter and thermistor bridge for undergraduate laboratories. A solution. **R. A. Bailey** and **J. W. Zubrick.** 732
Calorimeter calibration, A timed constant current source for. **Richard Fuchs.** 594
Calorimetry—dieting students, An illustration of applied (CEC). **Robert R. Perkins.** 548
Cancer therapy, Radiation sensitization in (Radiation chemistry—state of the art). **Clive L. Greenstock.** 156
Capillary flow meter, A simple. **Joseph W. Bozzelli** and **Jonathan Snyder.** 522
Carbon monoxide: A comparison with N_2, Some unusual properties of (TS). **Thomas J. Venanzi.** 423
Carbon monoxide in tobacco smoke using molybdosilicate, Detection of (TS). **H. I. Feinstein.** 633
Carboxylic acidity, More on effects controlling (TF). **Lowell M. Schwartz.** 778
Carcinogen control in the chemical laboratory (SAFETY). **James S. Johnson.** A257
Carcinogens and mutagens in the undergraduate laboratory (SAFETY). **Joy Melnikow, James R. Keeffe** and **R. L. Bernstein.** All
Career choice: Chemist or chemical engineer (PLACE). **Don Holt.** 494
Catalysis: A flexible experiment, adaptable to student ability and various teaching approaches, General acid. **R. S. Bulmer, E. Senogles** and **R. A. Thomas.** 738
Catalysis by micelles and by cycloamyloses: A comparative set of kinetic experiments. **I. Garcia-Mateous, M. A. Herraez, M. Rodrigo, L. J. Rodriguez,** and **M. M. Velazquez.** 584
Catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment, Base-. **W. G. Jackson, G. A. Lawrence, P. A. Lay** and **A. M. Sargeson.** 734
Cathodic protection: An overhead projector demonstration (TD). **Charles R. Ward** and **Thomas J. Greenbowe.** 505
Cathodic protection, A simple demonstration of (TD). **James F. Skinner.** 802

Cations in the general chemistry course, Hydrated. **George B. Kauffman** and **John F. Baxter, Jr.** 349
Cells, Solar photovoltaic (CP). **Charles D. Mickey.** 418
Center, A history of chemistry. **John H. Wotiz.** 415
Centrifugal force and the Bohr model of the hydrogen atom (TF). **Blanca L. Haendler.** 719
Ceramics: An example of environmental chemistry and chemistry for potters (LTE). **Allan J. Canty** and **Carolyn D. Canty.** 448
Changing conceptions of activation energy. **Philip D. Pacey.** 612
Chem Ed Compacts. edited by **Walter A. Wolf**
An illustration of applied calorimetry—dieting students. **Robert R. Perkins.** 548
Classroom participation-introduction to polymer science. **Leo H. Bowman.** 548
Molecular term symbols. **A. F. Leung, S. P. So** and **Wai-kee Li.** 431
Rules for coordination number of metal ions. **R. Thomas Myers.** 681
Two voyages of the starship chemterprise. **Rubin Battino.** 431
Chem I Supplement. edited by **Michael R. Slabaugh**
Chemicals from wood and other biomass. **David W. Goheen**
Part I: Future supply of organic chemicals. 465
Part II: The chemistry of conversion. 544
Chemistry and the modern prospector. **Thomas R. Neff.** 699
Conservation energy. **Harriet V. Taylor.** 185
Chemical Bingo. 69, 262, 429, 506, 593, 706
Chemical Bonds. edited by Albert Kirsch
A dialogue concerning the two chief world systems: Art and science. **Henry A. Bent.** 321
Implementing cultural science in the high schools. **William L. Marshall.** 770
Introducing chemical bonds—a chemist's approach to the novel "Ragtime." **Albert S. Kirsch.** 200
Science and the fine arts. **Jay A. Young.** 329
Chemical Principles Revisited. edited by **Charles D. Mickey**
Artistic metalwork and chemical technology. 315
Balancing complex redox equations by inspection. **Doris Kolb.** 642
Separation technology: I. Chromatography. 997
Solar Photovoltaic cells. 418
Some aspects of coordination chemistry. 257
Using the equilibrium concept. 56
Chemical engineer, Career choice: Chemistry or (PLACE). **Don Holt.** 494
Chemical fountain: An old experiment in a new setting, The. **Ruth Ben-Zvi** and **Judith Silberstein.** 68
Chemical of the Month. edited by **Darrell H. Beach**
Ammonia. **Gregory C. Miller.** 424
Hypo-hydrated sodium thiosulfate. 325
Lead. **Helen M. Stone.** 722
Sulfur. **Alice C. Johnsen.** 468
Chemicals from wood and other biomass. (CHEM I). **David W. Goheen**
Part I: Future supply of organic chemicals. 465
Part II: The chemistry of conversion. 544
Chemiluminescence, Cool-light (TD). **Bassam Z. Shakhashiri, Lloyd G. Williams, Glen E. Dirreen** and **Ann Francis.** 70
Chemistry: A basic approach (AV). **Bob Atkins.** 277
Chemistry and detective fiction: An interdisciplinary program for the nonscience major. **Dominick A. Labianca** and **William J. Reeves.** 683
Chemistry and the modern prospector (CHEM I). **Thomas R. Neff.** 699
Chemistry that's exotic and practical (CURR). **Grace Fischer McGuffie.** 314
Chemometrics: A course on application of mathematical techniques to chemistry, Teaching (CS). **Michael F. Delaney** and **F. Vincent Warren, Jr.** 646
Chemoreception, Bio-organic mechanisms, II: **Lloyd N. Ferguson.** 456
Chirality displayed by sugar pyranoid ring structures, Calculation and specification of the multiple. **Robert S. Shallenberger, Ronald E. Wrolstad** and **Laurie E. Kerschner.** 599
Chromatograph, Detector power supply for a Carle Basic TM Model 6500 gas. **B. Olesen, H. R. Pinnick, Jr.,** and **R. Dunlap.** 595
Chromatographers: A simple trap that eliminates bubbles in the solvent intake of high-pressure liquid chromatography pumps, Aid to. **G. L. Lookhart.** 78
Chromatograph/microcomputer interface using the general-purpose interface bus, A teaching gas (CS). 243
Chromatography.
Countercurrent distribution with simple equipment. 814
Liquid chromatographic determination of nitroanilines: An experiment for the quantitative analysis laboratory. 820
Chromatography, An inexpensive microcomputer-based data system for liquid and gas (CS). 244
Chromatography: An undergraduate biochemistry laboratory experiment, Separation of glycohemoglobins by ion exchange. **Lance E. Jackman.** 77
Chromatography, Separation technology: 1. (CP). **Charles D. Mickey.** 997
Chromatography, Simple classroom demonstration of gas. **Max A. Taylor** and **Kenneth E. Kolb.** 41
Classical demonstrations performed to a new beat. **John T. Moore, Charles R. Cates** and **James M. Garrett.** 635
Classroom and the laboratory, Application of the TRS-80 (CS). **Edward T. Gray, Jr.** and **Harry J. Workman.** 239
Coal-fired power plants, The radiation hazard of. **Jerrol Windbigler.** 500
Colmolality (colmoles). **Ascanio G. DiPippo.** 619
Color and the appearance of objects (LTE). **Fred W. Billmeyer, Jr.** 367
Color and the appearance of objects: A reply (LTE). **Thomas B. Brill.** 368
Color, Sir William Henry Perkin, pioneer in (PROFILES). **Miriam C. Nagel.** 305
Colorants in art objects by solution spectrophotometry: Pigments, Identification of organic. **Fred W. Billmeyer, Jr., Romesh Kumar** and **Max Saltzman.** 307
Common ion effect, More on the. **Walter Pape.** 1019
Communication pipeline, A plan for establishing and maintaining the high school-college. **Donald B. Phillips.** 632
Community colleges as a learning resource center, Secondary school utilization of. **Jerry L. Smith.** 776
Complexes, Isomers of octahedral coordination (CS). **Richard Cornelius.** 552
Complexes of molybdenum, Synthesis of dinitrogen and dihydrogen. **Leonard J. Archer, T. Adrian George** and **Mark E. Noble.** 727
Complex of molybdenum: Formation of a carbon-nitrogen bond, Reaction of dinitrogen. **David C. Busby, Carol M. Fendrick** and **T. Adrian George.** 728
Compound was discovered as a result of an insurance claim?, What (TS). **Maureen M. Julian.** 793
Computation of dissociation energies of diatomic molecules. **K. Ramani** and **A. M. Ghodgaonakar.** 609
Computer Series. edited by **John W. Moore**
13. Bits and pieces, 3. 46
14. Computer-assisted test construction in chemistry. **K. Jeffrey Johnson, W. Van Willis, Oliver Seely, Jr.,** and **John W. Moore.** 177
15. Bits and pieces, 4. 239
16. Introduction to chemical information storage and retrieval. **Peter F. Rusch.** 337
17. Bits and pieces, 5: Simulations. 405
18. Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and Apple microcomputers. **Kenneth L. Ratzlaff.** 470
19. Bits and Pieces, 6. 549
20. Teaching chemometrics: A course on application of mathematical techniques to chemistry. **Michael F. Delaney** and **F. Vincent Warren, Jr.** 646
21. Bits and Pieces, 7. 692
22. Integration of major computer program packages into experimental courses.
A freshman experience. **Irving Lipschitz.** 796
Organic synthesis design and the computer. **Bonnie Burns Sandel** and **Robert W. Solomon.** 798
23. Bits and Pieces, 8. 987
Computer Use.
Activity corrections in acid/base and precipitation titration curve calculations (CS). 242
Application of the TRS-80 in the classroom and the laboratory (CS). 239
BASIC version of the stiffly stable, gear numerical integrator (CS). 408
CAIQOA: Computer-assisted instrumental-qualitative organic analysis (CS). 46
Calculators and standard deviation (CS). 49
Commentary on countercurrent distribution program: Distribution curves (chromatograms) for many stages (CS). 696
Computer-assisted data analysis of enzyme kinetics (CS). 242
Computer-assisted instruction in general chemistry (CS). 694
Computer-based integration of fact and theory in introductory chemistry (CS). 48
Computer drill in thermodynamics (CS). 554
Computer exercise to teach data plotting. 710
Computer program on the calculations for honor class. 796
Computer program system for physical chemistry laboratory (CS). 551
Data system for liquid and gas chromatography (CS). 244
Gas chromatograph/microcomputer interface using the general-purpose interface bus. 243
Huckel molecular orbital computer program written in BASIC for microcomputer use (CS). 692
Inexpensive instrument/computer interface (CS). 549
Interactive computer program system for plotting molecules and crystal structures (CS). 552
Interfacing and data collection with the TRS-80 (CS). 241
Interpretation of an infrared spectrum on a minicomputer (CS). 554
Isomers of octahedral coordination complexes (CS). 552
KEMGAM: A chemical adventure (CS). 695
Laboratory simulations that include experimental error (CS). 407
Microcomputer-controlled gamma scintillation spectrometer (CS). 550
Microcomputer-simulated acid-base titration (CS). 48
Microcomputer simulation of lab instruments (CS). 410
Microprocessor-simulated mass spectrometer (CS). 411
Molecular parameters of diatomic molecules: A programmable calculator program. 616

Non-linear least-squares optimization of parameters for first-order kinetics on programmable calculators (CS). 696
OPTSCAN and GRADE- automated grading and record keeping (CS). 694
Organic nomenclature drill (CS). 47
Organic synthesis design and the computer. 798
Preparation of posters and overhead transparencies (CS). 691
Program to calculate alkalinity via Gran's plot method (CS). 555
QUEST: CAIDI programs to set up and use question-and answer exercises (CS). 47
S_N1S_N2-Graphics to improve analysis of organic kinetics (CS). 693
Selected bibliography of computer programs in chemical education (CS). 50
Simulation game for decision-making (CS). 410
Simulation methods in kinetics courses (CS). 405
Simulation of first-order kinetic mechanisms (CS). 409
Teaching chemometrics (CS). 646
Two computer programs to introduce X-ray crystallography (CS). 555
Using microcomputer graphics to teach quantum theory (CS). 553
Computers. Media, gadgets (Report, Sixth Biennial Conference on Chemical Education. 13
Concrete, Growing (AA). **Ronald DeLorenzo.** 787
Conductance measurements, A study of the kinetics of the substitution reactions of square planar platinum(II) complexes as monitored by. **James V. Marzik, Anthony D. Sabatelli, Paul J. Fitzgerald** and **Joseph E. Sarneski.** 589
Conductimetric-potentiometric titration for an advanced laboratory, A. **Lois C. Rosenthal** and **Lawrence C. Nathan.** 656
Conference, Recommendations for the Maryland. **M. J. Frazer.** 454
Conference, United States to host international chemical education. **Bassam Z. Shakhashiri** and **Marjorie H. Gardner.** 451
Conjugate and nonconjugate reduction with $LiAlH_4$ and $NaBH_4$ (TF). **G. Richard Meyer.** 628
Conjugate pairs, A physical model to demonstrate acid-base (EXAM). **Robert W. Naylor.** 1017
Conservation energy (CHEM I). **Harriet V. Taylor.** 185
Conservation of energy, Weight-loss diets and the law of conservation of energy (AA). 996
Conservation of matter, Chemical wastes and the law of (AA). **John W. Hill.** 996
Conservation, Synthetic materials in art. **Anthony Werner.** 321
Constant current source for calorimeter calibration, A timed. **Richard Fuchs.** 594
Contact lenses in the laboratory (SAFETY). **David W. Kingston.** A289
Contemporary History Series. edited by **Leonard Fine** and **Eric S. Proskauer**
Polymer chemistry in Europe and America—how it all began. **Herman Mark.** 527
The development of polymer chemistry in America—the early days. **C. S. Marvel.** 535
Contemporary issues related to chemistry (Report, Sixth Biennial Conference on Chemical Education). 4
Continuous variation study of heats of neutralization, **A. Dennis W. Mahoney, Joyce A. Sweeney, Derek A. Davenport** and **Richard W. Ramette.** 730
Contraction process: An undergraduate laboratory experiment using viscosity to follow the progress of a reaction, The biochemistry of the muscle. **James F. Belliveau, Gerard P. O'Leary, Jr.,** and **Harry Hajian.** 442
Controlled release applications of organometals. **John S. Thayer.** 764
Controller, A recorder-activated double set-point process. **Steven G. Platt** and **Donald E. Campbell.** 583
Cool-light chemiluminescence (TD). **Bassam Z. Shakhashiri, Lloyd G. Williams, Glen E. Dirreen** and **Ann Francis.** 70
Cooperation between university chemical education and industry in Nigeria, The need for (CE). **Durojaiye A. Ajeyalemi.** 361
Cooperative Education. edited by **Geoffrey Davies** and **Allan Mc Clelland**
Origin and development of cooperative education at Thomas More College. **Sr. M. Casimira Mueller.** 707
The administration of a cooperative education program: The art of coordination. **Stephen M. Kane** and **Katherine B. Wilson.** 499
The faculty benefits. **Gerald Franzen.** 709
The implementation of the cooperative education program by the chemistry department of Thomas More College. **Gerald Franzen.** 708
The need for cooperation between university chemical education and industry in Nigeria. **Durojaiye A. Ajeyalemi.** 361
Coordinated ligand-radicals, Intramolecular electron transfer from (Radiation Chemistry—State of the Art). **Morton Z. Hoffman** and **Kevin D. Whitburn.** 119
Coordination chemistry, Some aspects of (CP). **Charles D. Mickey.** 257
Coordination compounds in the last fifty years, Some developments in the stereochemistry of. **John C. Bailar, Jr.** 674
Coordination number of metal ions, Rules for (CEC). **R. Thomas Myers.** 681
Copper in apple ash glazes for ceramics: An example of environmental chemistry and chemistry for potters (LTE). **Allan J. Canty** and **Carolyn D. Canty.** 448
Corrections to estimates of fossil fuel lifetimes. **Albert A. Bartlett.** 501
Countercurrent distrtibution program: Distribution curves (chromatograms for many stages, Commentary on (CS). **George Vogel.** 696
Countercurrent distribution with simple equipment. **I. R. C. Bick, A. J. Blackman** and **E. J. Browne.** 814
Creating a working relationship between universities and high schools. **Richard Steiner** and **Michael Lesiecki.** 493
Cryoscopic solvent, Cyclohexane as a (SAFETY), solvent (SAFETY). **Margaret J. Steffel.** A133
Crystal-field and angular-overlap models as applied to some planar, pyramidal and cubic symmetries, The symmetry-based equivalence between the. **P. J. Steenkamp** and **J. W. Gonsalves.** 380
Crystal field stabilization energy (CFSE), The (TF). **Swarn Singh Parmer.** 1035
Crystal structures, Interactive computer program system for plotting molecules and (CS). **M. L. Dheu** and **S. Perez.** 552
Crystallography—two computer programs, An introduction to X-ray (CS). **M. Webster.** 555
Crystals!, Holey (TING). **H. I. Feinstein.** 638
Cultural science in the high schools, Implementing (CB). **William L. Marshall.** 770
Curriculum Report. edited by **Grace Fisher McGuffie**
An investigation of Piagetian stages in Italian secondary school students. **Paolo Violino** and **Beatrice Semino Di Giacomo.** 639
An update, **Grace Fischer McGuffie.** 191
A practical chemistry course. **George R. Powers.** 1015
A report on science teaching and society. **Barbara B. Lewis.** 704
Chemistry that's exotic and practical. **Grace Fischer McGuffie.** 314
What is expected from high school chemistry by selected college chemistry instructors. **John Zimelis.** 488
Curriculum.
Administration of a cooperative education program: The art of coordination (CE). 499
Audio-tutorial approach to the teaching of physical chemistry and electrochemistry. 773
Chemistry and detective fiction for nonscience major. 683
Computer program on the calculations for honor class. 796
Course on chemometrics (CS). 646
Faculty benefits of cooperative education program (CE). 709
Generality of the PSI approach. 686
Implementing cultural science in the high schools (CB). 770
Incorporating descriptive chemistry into an inorganic course. 651
Individualized instruction in chemistry is possible (VIEW). 1007
New courses (Report, Sixth Biennial Conference on Chemical Education). 16
Occupational health and safety program (SAFETY). A93
Open laboratory—an alternative (VIEW). 794
Organic synthesis design and the computer. 798
Origin and development of cooperative education at Thomas More College (CE). 707
Physically handicapped, teaching chemistry to the. March issue, pp. 205–238—See individual article listings under *Physically Handicapped.*
Pre-course in basic skills (JOULES). 636
Profile of an abused drug. 664
Project TEACH supplemented. 766
Report of the Task Force on the Teaching of Chemistry: Unique courses. 481
Secondary school utilization of community colleges as a learning resource center. 776
Social service course on hashish and marijuana. 43
Survey of undergraduate research over the past decade. 780
Teacher training and the pupil-oriented lesson in West Germany. 569
Teaching a full year's chemistry course in a six weeks' summer session (VIEW). 562
The implementation of the cooperative education program by the chemistry department of Thomas More College (CE). 708
The role of chemistry in firefighting (JOULES). 698
Topics course on chemical application of lasers. 652
Cyclic phosphonitrilic halides, Huckel orbitals and energies of (EXAM). **Wai-Kee Li** and **Thomas C. W. Mak.** 362
Cycloamyloses: A comparative set of kinetic experiments, Catalysis by micelles and by. **I. Garcia-Mateos, M. A. Herraez, M. Rodrigo, L. J. Rodriguez** and **M. M. Velazquez.** 584
Cyclohexane as a cryoscopic solvent (SAFETY). **Margaret J. Steffel.** A133
Cyclohexanol to cyclohexanone by sodium hypochlorite, Oxidation of. **Norbert M. Zuczek** and **Paul S. Furth.** 824

D

Damn the permanganate volcanoes: Full principles ahead! (PO). **Frank L. Pilar.** 803
Dancing Wu Li masters, The (IDEAS). **George W. Stapleton.** 574
Data: A laboratory exercise, Evaluation of experimental. **Cindy C. Cunningham, G. R. Brown** and **L. E. St Pierre.** 509
Data: An illustration of the usefulness of an inexpensive programmable pocket calculator, Analysis of student laboratory. **Thomas P. Chirpick.** 436

Demonstration of gas chromatography, Simple classroom. **Max A. Taylor** and **Kenneth E. Kolb.** 41

Demonstrations performed to a new beat, Classical. **John T. Moore, Charles R. Cates** and **James M. Garrett.** 635

Denaturation: A physical chemistry project lab, Protein. **Miles Pickering** and **Robert H. Crabtree.** 513

Density demonstration using methane bubbles, Spectacular gas density (TD). **Robert Snipp, Bruce Mattson** and **Winters Hardy.** 354

Descriptive chemistry into an inorganic course, Incorporating. **B. Edward Cain.** 651

Detection of carbon monoxide in tobacco smoke using molybdosilicate (TS). **H. I. Feinstein.** 633

Detective fiction: An interdisciplinary program for the nonscience major, Chemistry and. **Dominick A. Labianca** and **William J. Reeves.** 683

Determination of iron by atomic absorption in vitamin-mineral tablets. **Robert P. Pinnell and Andrew W. Zanella.** 444

Determination of phenol bromination kinetics, Amperometric. **R. Cohen, C. Matzek, S. Schlosser** and **C. O. Huber.** 823

Determination of the extraction constant for zinc pyrrolidinecarbodithioate: An atomic absorption experiment for instrumental analysis. **L. Claron Hoskins, Paul B. Reichardt,** and **Richard J. Stolzberg.** 580

Determination of the oxygen content of air, A general chemistry experiment for the. **James P. Birk, Larry McGrath** and **Kay Gunter.** 804

Deuteroalkanes, An early laboratory introduction to IR spectroscopy: Gaseous. **Loren L. Braun** and **Raymond L. Law.** 79

Developments in the stereochemistry of coordination compounds in the last fifty years, Some. **John C. Bailar, Jr.** 674

Diagrams to classify matter, A classroom learning cycle: Using (LA). **Helen J. James** and **Samuel L. Nelson.** 476

Dialogue concerning the two chief world systems: Art and science, A (CB). **Henry A. Bent.** 331

Diatomic molecules: A programmable calculator program, Molecular parameters of. **Jose Miguel Gallego Garcia.** 610

Diatomic molecules, Computation of dissociation energies of. **K. Ramani** and **A. M. Ghodgaonkar.** 609

Diatomic molecules: Some limitations, Analytic potential functions for. **John S. Winn.** 37

Dieting students, An illustration of applied calorimetry—(CEC). **Robert R. Perkins.** 548

Diets and the law of conservation of energy, Weight-loss (AA). **John W. Hill.** 996

Digital buret, A novel. **Joseph W. Long.** 658

Dinitrogen complex of molybdenum: Formation of a carbon-nitrogen bond, Reaction of a. **David C. Busby, Carol M. Fendrick** and **T. Adrian George.** 728

Dissociation energies of diatomic molecules, Computation of. **K. Ramani** and **A. M. Ghodgaonkar.** 609

Distilled water for science laboratories in the humid tropics, A novel source of. **C. O. Ikediboi.** 788

Division of Chemical Education.

Message from the Chairman. **Bassam Z. Shakhashiri.** 25

Reflections and challenges. **Bassam Z. Shakhashiri.** 980

Report of ACS examinations committee. 286

Report of Sixth Biennial Conference on chemical education. 2

Report from the member-at-large. **Ethel L. Schultz.** 455

Doing chemistry (Report, Sixth Biennial Conference on Chemical Education. 9

Drawings, On orbital. **Carl W. David.** 377

Driving force of addition and elimination reactions clarified through the Hellmann-Feynman theorem, The. **Paul Blaise, Phillippe Pujol** and **Olivier Henri-Rousseau.** 615

Drug analysis, Sequential decision-making process under conditions of uncertainty in. **Ik-Whan Kwon** and **Joe H. Kim.** 462

Drug, 1-(1-phenylcyclohexyl)piperidine hydrochloride: A profile of an abused. **Dominick A. Labianca.** 664

Dyes, The chemistry of plant and animal. **Margareta Sequin-Frey.** 301

E

Editorially Speaking.

Chemistry and the Disabled student. 203

Declining science literacy. 1

Faculty development and evaluation. 525

Investment, risk, and return in teaching. 289

On the importance of history. 369

Our future students: Who will they be? 973

Rising student consumerism. 751

Science: The road to slavery? 597

Teachers helping teachers. 81

The importance and utility of conferences. 449

Utility and Intellect. 835

What can scientists learn from the humanities? 669

Effects controlling carboxylic acidity, More on (TF). **Lowell M. Schwartz.** 778

Effects of Ionizing radiation on mammalian cells (Radiation Chemistry—State of the Art). **John E. Biaglow.** 144

Einstein equations, Motion in viscous liquids: Simplified derivations of the Stokes and. **Max A. Lauffer.** 250

Elasticity—a physical chemistry experiment, Rubber. **Morris Bader.** 285

Electrochemical destruction of pathogens (IN). **W. Conard Fernelius.** 558

Electrochemistry, An audio-tutorial approach to the teaching of physical chemistry and. **Stephen K. Lower.** 773

Electrochemistry

A simple demonstration of cathodic protection (TD). 802

Red cabbage and the electrolysis of water (EXAM). 1017

Electrode in aqueous-organic media, Theory and practical use of an hydrogen. **P. Letellier, F. Millot, N. Baffier** and **R. Combes.** 576

Electrolysis of water, Red cabbage and the (TD). **James F. Skinner.** 1017

Electrolytes and the programmable TI 59 calculator, Complete conductance equation of 1-1 (CS). **P. Rechberger** and **W. Linert.** 245

Electron motion, A Moire pattern analogy to (AA). **James R. Bard.** 480

Electron spin resonance of radiation produced free radicals (Radiation Chemistry—State of the Art). **Michael D. Sevilla.** 106

Elemental concentration (IDEAS). **Zoe Enyedy.** 426

Eliot: Chemist and teacher, Charles W. (PROFILES). **Sidney Rosen.** 1005

Energies of diatomic molecules, Computation of dissociation. **K. Ramani** and **A. M. Ghodgaonkar.** 609

Energy, Changing conceptions of activation. **Philip D. Pacey.** 612

Energy, Conservation (CHEM I). **Harriet V. Taylor.** 185

Energy, The crystal field stabilization (TF). **Swarn Singh Parmer.** 1035

Energy level populations, Temperature and unique. **C. S. McKee.** 605

Energy options, An alternative viewpoint on (PO). **Buddhadev Sen.** 19

Energy, Weight-loss diets and the law of conservation of (AA). **John W. Hill.** 996

Entropy as a driving force (TD). **John C. Salzsieder.** 280

Entropy rules in my class too! (AA). **Alvan D. White.** 645

Environmental Chemistry.

Computer program to calculate alkalinity via Gran's plot method (CS). 555

Corrections to estimates of fossil fuel lifetimes. 500

Detection of carbon monoxide in tobacco smoke using molybdosilicate (TS). 633

Radiation hazard of coal-fired power plants. 500

Enzyme kinetics, Computer-assisted data analysis of (CS). **Marvin Bishop** and **Edgardo Zamora.** 242

Equilibria on a pocket calculator, A comprehensive treatment of acid-base (CS). **Brian W. Clare.** 555

Equilibrium concept, Using the (CP). **Charles D. Mickey.** 56

Errors in retrospect (TF). **W. H. Eberhardt.** 359

ESR: The example of triphenyl-substituted radicals $(C_6H_5)_3A$ of group IVB elements, Structural information from liquid- and solid-phase. **M. Geoffroy** and **J. H. Hammons.** 389

Europe, and America—how it all began, Polymer chemistry in (CH). **Herman Mark.** 527

Evaluation of experimental data: A laboratory exercise in. **Cindy C. Cunningham, G. L. Brown** and **L. E. St Pierre.** 509

Exam Question Exchange. edited by **John J. Alexander**

A physical model to demonstrate acid-base conjugate pairs. **Robert W. Naylor.** 1017

Buffer pH in electrolysis. **Hugh Akers.** 1014

Huckel orbitals and energies of cyclic phosphonitrilic halides. **Wai-Kee Li** and **Thomas C. W. Mak.** 362

Red cabbage and the electrolysis of water. **James F. Skinner.** 1017

Exchange stabilization and the variation of ionization energy in the exploding beverage container, Pressure and the (EXAM). **Robert R. Perkins.** 363

Extraction constant for zinc pyrrolidinecarbodithioate: An atomic absorption experiment for instrumental analysis, Determination of the. **L. Claron Hoskins, Paul B. Reichardt,** and **Richard J. Stolzberg.** 580

F

Factorization method and its applications in quantum chemistry, The. **Ranjan Das** and **A. B. Sannigrahi.** 383

Faculty development, TAs, teaching strategies (Report, Sixth Biennial Conference on Chemical Education. 14

Faculty benefits, The (CE). **Gerald Franzen.** 709

Ferrioxalate actinometer: A lecture demonstration, The (TD). **Edward W. Vitz.** 655

Fifteen years with a nonacademic chemistry course (VIEW). **C. LeRoy Darlington.** 711

Fifty-Minute Experiment. edited by **Gerard Baruch**

It's Beanium!!. **Gregory C. Miller.** 507

Filtering technique: A quantitative evaluation. **C. E. Meloan.** 73

Firefighting, The role of chemistry in (JOULES). **Emanuel G. Terezakis.** 698

First-order kinetic mechanisms, Simulation of (CS). **S. W. Orchard** and **M. B. Mooiman.** 409

First-order kinetics on programmable calculators, Non-linear least-squares optimization of parameters for (CS). **Domenico De Marco, Athos Bellomo** and **Aiessandro De Robertis.** 696

Flask for quantitative analysis, A new transfer. **P. L. Gaus** and **Lori A. Pedersen.** 353

Fluorescence and resonance Raman spectroscopy of bromine and iodine vapor, Resonance. **C. Frank Shaw, III.** 343

Fluorescence: A physical chemistry experiment, Laser-induced molecular. **Joel Tellinghuisen.** 438
Food, Radiation chemistry and the radiation preservation of (Radiation Chemistry—State of the Art). **Irwin A. Taub.** 162
Forensic science defined. **R. C. Briner.** 288
Formal thought in introductory chemistry students. **Robert D. Kavanaugh** and **William R. Moomaw.** 263
Fossil fuel lifetimes, Corrections to estimates of. **Albert A. Bartlett.** 501
Franklin letter on lead poisoning, The. **Stanford L. Tackett.** 274
Frasch, Sulfur King, Herman (PROFILES). **Miriam C. Nagel.** 60
Free radical mechanisms in autoxidation processes (Radiation Chemistry—State of the Art). **Michael G. Simic.** 125
Free radical reactions with simple biochemical systems (Radiation Chemistry—State of the Art). **J. Leslie Redpath.** 131
Free radicals, Electron spin resonance of radiation produced (Radiation Chemistry—State of the Art). **Michael D. Sevilla.** 106
Free radicals generated by radiolysis of aqueous solutions (Radiation Chemistry—the State of the Art). **Harold A. Schwarz.** 101
Freeze-proof bugs (AA). **Ronald DeLorenzo.** 788
Freshman experience, A (CS). **Irving Lipschitz.** 796
Fruit basket analogy, The (AA). **William Bleam, Jr.** 184
Fuel lifetimes, Corrections to estimates of fossil. **Albert A. Bartlett.** 501
Further experiments with hemoglobin. **R. W. Hanson.** 75

G

Game for decision-making, A simulation (CS). **E. D. Cavin** and **Claudia S. Cavin.** 410
Gas buret, A simple and accurate. **J. A. Lely.** 358
Gas cell, A homemade, high pressure. **John Tierney** and **David R. Dalton.** 813
Gas chromatograph, Detector power supply for a Carle Basic TM Model 6500. **B. Olesen, H. R. Pinnick, Jr.,** and **R. Dunlap.** 595
Gas chromatograph/microcomputer interface using the general-purpose interface bus, A teaching (CS). **Kathy J. Dien, Ronald S. Bell,** and **Michael D. Morris.** 243
Gas chromatography, An inexpensive microcomputer-based data system for liquid and (CS). **Charles B. Pate** and **Harvey B. Herman.** 244
Gas chromatography, Simple classroom demonstration of. **Max A. Taylor** and **Kenneth E. Kolb.** 41
Gas density demonstration using methane bubbles, Spectacular (TD). **Robert Snipp, Bruce Mattson** and **Winters Hardy.** 354
Gas phase radiation chemistry, Ion-molecule reactions in (Radiation chemistry—the State of the Art). **Clive Willis.** 88
Gay-Lussac: Chemists extraordinary (PROFILES). **R. P. Graham.** 789
General Chemistry.
Anomalies in the periodic table. 478
Another approach to titration curves: Which is the dependent variable? 659
Aristic metalwork and chemical technology (CP). 315
Balancing complex redox equations by inspection. (CP). 642
Calorimetry presentation linked to dieting (CEC). 548
Cathodic protection: An overhead projector demonstration (TD). 505
Chemical wastes and the law of conservation of matter (AA). 996
Chemicals from wood and other biomass. 465, 544
Chemistry and the modern prospector (CHEM I). 699
Chemistry basic learning objectives. 714
Comprehensive treatment of acid-base equilibria on a pocket calculator (CS). 555
Computer-assisted instruction in general chemistry (CS). 694
Computer-based integration of fact and theory in introductory chemistry (CS). 48
Conservation energy. 185
Corrections to estimates of fossil fuel lifetimes. 500
Cyclohexane as a cryoscopic solvent (SAFETY). A133
Demonstrating tetrahedral bonding using soap films (TD). 280
Determination of the oxygen content of air. 804
Effect of TA background on student laboratory achievement. 768
Efficiency of orbital overlap: Visual demonstration. 757
Entropy as a driving force (TD). 280
Experiment on IR spectrum of methanol. 809
Ferrioxalate actinometer: A lecture demonstration (TD). 655
Generality of the PSI approach. 686
Growing concrete (AA). 787
Holey crystals! 638
How big is Avogadro's number. 508
Hydrated cations in the general chemistry course. 349
Inducing formal thought in introductory chemistry students. 263
KEMGAM: A chemical adventure (CS). 695
Lead (CM). 722
Lecture demonstration model of the quantum mechanical atom (TD). 801
Mechanical analog of surface pressure. 197
Method of financing safety goggles. 479
Modified thermit lecture demonstration. 802
More on the common ion effect. 1019
Motivational impact of bonus system grading. 43
Physical model to demonstrate acid-base conjugate pairs (EXAM). 1017
Polymer science introduced by student participation (CEC). 548
Popper's epistemology as a pedagogic and didactic principle. 554
Pressure and the exploding beverage container (EXAM). 363
Prussian blue, an inorganic evergreen (TS). 1013
Quick questions (TING). 994
Radiation hazard of coal-fired power plants. 500
Reaction of sodium with water for large audience (TD). 506
Red cabbage and the electrolysis of water (EXAM). 1017
Role of student development level in teaching. 484
Rules for coordination number of metal ions (CEC). 681
Scientific method through laboratory experience. 434
Separation technology: 1. Chromatography (CP). 997
Simple demonstration of cathodic protection (TD). 802
Snowed in (TING). 66
Solar photovoltaic cells (CP). 418
Some aspects of coordination chemistry (CP). 257
Student perception of problem solving difficulties. 1036
Spectacular gas density demonstration using methane bubbles. 354
Teaching aids for visually handicapped. 226
Temperature effect on reaction rates (TD). 354
Using the equilibrium concept (CP). 56
Weight-loss diets and the law of conservation of energy (AA). 996
Why oatmeal sticks to your ribs (AA). 787
General papers (Report, Sixth Biennial Conference on Chemical Education). 17
Genetic material, Radiolytic damage to (Radiation chemistry—State of the Art). **John F. Ward.** 135
Gibbs function versus degree of advancement: The Gibbs valley. **Richard W. Cohen** and **John C. Whitmer.** 21
Glass rod method for finding the tangent of a curve, Improved. **Douglas R. Henry.** 518
Glycohemoglobins by ion exchange chromatography: An undergraduate biochemistry laboratory experiment, Separation of. **Lance E. Jackman.** 77
Grade thirteen syndrome, The (PO). **James J. Bohning.** 717
Grading and record keeping, OPTSCAN and GRADE—Automated (CS). **R. J. Munn, J. M. Stewart, M. Katherine Pagoaga** and **Timothy C. I. Munn.** 694
Gran's plot method, A computer program to calculate alkalinity via (CS). **Kenneth West** and **Patricia Flath.** 555
Graphics to teach quantum theory, Using microcomputer (CS). Frank Rioux. 553
Guidelines for a complete safety audit of the academic chemistry laboratory (SAFETY). **Safety Committee of the New York Section of the American Chemical Society.** A361

H

Hard rock (TING). **H. I. Feinstein.** 435
Harmonic oscillator wavefunctions, Integral of ξ^n, **Bhairir D. Joshi, Stephen E. La Grou,** and **Douglas W. Spooner.** 39
Hashish and marijuana: Chemistry in the social service curriculum. **Uri Zoller** and **Shoshana Weiss.** 42
Hazard of coal-fired power plants, The radiation. **Jerrol Windbigler.** 500
Hazardous is synthetic chemistry?, How (PO). **Terry I. Quickenden.** 503
Hearing impaired, Chemistry and the. **John J. Gavin, B. Edward Cain, Robert S. Menchel, Dale L. Rockwell** and **Nansie S. Sharpless.** 209
Heats of neutralization, A continuous variation study of. **Dennis W. Mahoney, Joyce A. Sweeney, Derek A. Davenport** and **Richard W. Ramette.** 730
Hellmann-Feynman theorem, The driving force of addition and elimination reactions clarified through the. **Paul Blaise, Phillippe Pujol** and **Olivier Henri-Rousseau.** 615
High School Chemistry.
Also see listings under the following features: *AV Review, Applications and Analogies, Apparatus Review, Brain Tinglers, Chemical Principles Revisited, Chemical Bingo, Chem I Supplement, Curriculum Report, Chemical Bonds, Chemical of the Month, Ideas from Everywhere, Inflation Fighters, Learning Activities, Opportunities in Continuing Education, Profiles in Chemistry, A Place for chemists, Something New from the Past, Safety Tips, Thumbnail Sketches, 50-Minute Experiment,* and *View from my Classroom.*
Also see special issue listings under *Art, Chemistry of—A Sequel.*
1st annual workshop at the interface of high school and college chemistry. 266
Biennial—truely an interface. 61
"Chemical fountain": An old experiment in a new setting. 68

Chemistry basic learning objectives. 714
Chemistry of plant and animal dyes. 301
Classical demonstrations performed to a new beat. 635
Creating a working relationship between universities and high schools. 493
Identification of organic colorants in art objects by solution spectrophotometry: Pigments. 307
Organizing a high school chemistry olympics. 720
Mathematics readiness test for prospective chemistry students. 564
Mechanical analog of surface pressure. 197
Method of financing safety goggles. 479
Plan for establishing and maintaining the high school-college communication pipeline. 632
Secondary school utilization of community colleges as a learning resource center. 776
Short history of the chemistry of painting. 291
Teacher training and the pupil-oriented lesson in West Germany. 569
The purpose of laboratory instruction in high school chemistry: A historical survey. 194
Understanding of the atomic orbital concept by Italian high school students. 568
White ammonia fountain. 498
High school chemistry (Report, Sixth Biennial Conference on Chemical Education. 11
High pressure gas cell, A homemade. **John Tierney** and **David R. Dalton.** 813
High technology laboratory aids for visually handicapped chemistry students. **David Lunney** and **Robert C. Morrison.** 228
History of chemistry
An early report on the physiological effects of X-rays (SBS). 275
Charles W. Eliot: Chemist and teacher (PROFILES). 1005
Discovery of nitroglycerine: Its preparation and therapeutic utility (SBS). 364
Dr. Thomas Midgley: From the periodic table to production (PROFILES). 496
Friedrich August Kekule (PROFILES). 624
Gay-Lussac: Chemist extraordinary (PROFILES). 789
Herman Frasch, sulfur king (PROFILES). 60
Kathleen Lonsdale and the planarity of the benzene ring (SBS). 365
Mendeleev as a speculator (SBS). 790
Mendeleev's discovery of the periodic law (SBS). 28
Polymer chemistry in Europe and America—how it all began (CH). 527
R. B. Warder and the kinetics of saponification (SBS). 559
Sir William Henry Perkin, pioneer in color (PROFILES). 305
Some developments in the stereochemistry of coordination compounds in the last fifty years. 674
Sulfur, stereochemistry and the Reverend William Archibald Spooner. 682
The ACS in San Francisco (SBS). 626
The Franklin letter on lead poisoning. 274
The development of polymer chemistry in America—the early days (CHS). 535
What compound was discovered as a result of an insurance claim? (TS). 793
Wolfgang Pauli (1900–1958): A brief anecdotal biography (PROFILES). 273
History of chemistry center, A. **John H. Wotiz.** 415
History of the chemistry of painting, A short. **Harriet G. Friedstein.** 291
Holey crystals! (TING). **H. I. Feinstein.** 638
Hood studies, Laboratory (SAFETY). **W. G. Mikell** and **L. R. Hobbs.** A165
Hormone, *p*-chlorophenoxyacetic acid-preparation of a synthetic plant. **William F. Wood.** 76
Huckel molecular orbital computer program written in BASIC for microcomputer use, A simple (CS). **Barrie M. Peake** and **Roger Grauwmeijer.** 692
Huckel orbitals and energies of cyclic phosphonitrillic (EXAM). **Wai-Kee Li** and **Thomas C. Mak.** 362
Humorous anecdotes sought (LTE). **Robert L. Weber.** 288
Hydrated cations in the general chemistry course. **George B. Kauffman** and **John F. Baxter, Jr.** 349
Hydrogen electrode in aqueous-organic media, Theory and practical use of an. **P. Letellier, F. Millot, N. Baffier** and **R. Combes.** 576
Hydrogenic atoms, Radial probability density and normalization in. **Luis Lain, Alicia Torre** and **Jose M. Alvarino.** 617
Hydroxyl ions in the reaction of sodium with water, Dramatic demonstration for a large audience: The formation of (TD). **Alan T. Hutton.** 506
Hypo-hydrated sodium thiosulfate (CM). **Darrell H. Beach.** 325

I

Ideas From Everywhere. edited by **Douglas D. Smith**
Elemental concentration. **Zoe Enyedy.** 426
Ideas from the 6th. **Douglas D. Smith.** 67
In two years will it all be forgotten? **Ronald DeLorenzo.** 426
More from the 6th Biennial Conference. **Douglas D. Smith.** 278
Oscillations. **George W. Stapleton.** 575
"The Dancing Wu Li masters." **George W. Stapleton.** 574
The school science review. **George W. Stapleton.** 575
Identification of organic colorants in art object by solution spectrophotometry: Pigments. **Fred W. Billmeyer, Jr., Romesh Kuman** and **Max Saltzman.** 307
Implementation of the cooperative education program by the chemistry department of Thomas More College (CE). **Gerald Franzen.** 708
Implicit curriculum, The (PO). **George F. Atkinson.** 560
Increasing interest and motivation through practical applications of chemistry (VIEW). **Jack Foote.** 198
Individualized instruction in chemistry is possible (VIEW). **Shirley E. Richardson.** 1007
Inducing formal thought in introductory chemistry students. **Robert D. Kavanaugh** and **William R. Moomaw.** 263
Industrial Chemistry.
Also see listings under *Real World of Industrial Chemistry.*
Controlled release applications of organometals. 764
Industrial Notes.
Electrochemical destruction of pathogens. **W. Conard Fernelius.** 558
Microtrac particle analyzer. 765
Replacement for asbestos. **W. Conrad Fernelius.** 558
Sebasic acid from adipic acid electrochemically. **Kenneth E. Kolb.** 558
Industrial applications of radiation chemistry, Radiation processing: (Radiation Chemistry—State of the Art). **Joseph Silverman.** 168
Industrial research chemist, The (PLACE). **E. J. Griffith.** 268
Inequality of decision on species instability. **Y. R. Luo.** 26
Inferring molecular structure from thermodynamic data. **A. J. Kassman** and **S. A. Gregory.** 247
Inflation Fighters. edited by **Sheldon H. Cohen**
An inexpensive pH meter. **Dennis Sievers.** 281
Information, storage and retrieval, Introduction to chemical (CS). **Peter F. Rusch.** 337
Infrared analysis, A rapid method for preparing solid compounds for. **G. Olof Larson, Jeff W. Miller** and **Everett J. Nienhouse.** 80
Infrared experiment, The vinyl acetate content of packaging film: A quantitative. **K. N. Allpress, B. J. Cowell** and **A. C. Herd.** 741
Infrared spectrum of methanol: A first-year student experiment. **Garth Boehm** and **Mark Dwyer.** 809
Infrared spectrum on a minicomputer, Interpretation of an (CS). **James C. Howald** and **Francis L. Jones.** 554
Inorganic Chemistry
Anomalies in the periodic table. 478
Base-catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment. 734
Crystal field stabilization energy. 1035
Exchange stabilization and the variation of ionization energy in the Huckel orbitals and energies of cyclic phosphonitrilic halides (EXAM). 362
Incorporating descriptive chemistry into an inorganic course. 651
Inequality of decision on species instability. 26
Intramolecular electron transfer from coordinated ligand-radicals (Radiation Chemistry—State of the Art). 119
Isomers of octahedral coordination complexes (CS). 552
Isotopic exchange in Prussian blue. 355
Luminescent processes elucidated by simple experiments on ZnS. 806
Metal ions in unusual vancy states (Radiation Chemistry—State of the Art). 114
Nuclear quadrupole resonance of R_3SbX_2 compounds (IE). 519
Reactions of a dinitrogen complex of molybdenum: Formation of a carbon-nitrogen bond. 728
Silver mirror demonstration. 655
Some aspects of coordination chemistry (CP). 257
Some developments in the stereochemistry of coordination compounds in the last fifty years. 674
Study of the kinetics of the substitution reactions of square planar platinum(II) complexes as monitored by conductance measurements. 589
Symmetry-based equivalence between the crystal-field and angular-overlap models as applied to some planar, pyramidal and cubic symmetries. 380
Synthesis of dinitrogen and dihydrogen complexes of molybdenum. 727
Inorganic nomenclature and formula writing, A versatile program for drill in (CS). **T. Cassen.** 49
Inservice needs: Are they unique?, Chemistry teachers'. **Peter A. Rubba.** 430
Instrument/computer interface, A versatile and inexpensive (CS). **J. T. Burt, J. E. Byrd, G. L. Helm, M. J. Perona, A. R. Ristow** and **D. E. Wilkinson.** 549
Instrumental analysis, Determination of the extraction constant for zinc pyrrolidinecarbodithioate: An atomic absorption experiment for **L. Claron Hoskins, Paul B. Reichardt,** and **Richard J. Stolzberg.** 580
Instruments, Microcomputer simulation of lab (CS). **G. L. Breneman.** 410
Insurance claim?, What compound was discovered as a result of an (TS). 793
Integral of ξ^r over harmonic oscillator wave functions. **Bhair O. Joshi, Stephen LaGrou** and **Douglas W. Spooner.** 39
Integrated lab. Further throughts on the (LTE). **R. A. Bailey** and **J. W. Zubrick.** 368

Integration of fact and theory in introductory chemistry, Computer-based (CS). **Glenn E. Palmer.** 48

Interactive computer program system for plotting molecules and crystal structures (CS). **M. L. Cheu** and **S. Perez.** 552

Interface, A versatile and inexpensive instrument/computer (CS). **J. T. Burt, J. E. Byrd, G. L. Helm, M. J. Perona, A. R. Ristow** and **D. E. Wilkinson.** 549

Interfacing an Apple II microcomputer to a UV-visible spectrophotometer (CS). **G. Scott Owen, Deborah Travis** and **Terry Green.** 690

Interfacing and data collection with the TRS-80 (CS). **Edward T. Gray Jr.** and **Harry J. Workman.** 241

Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and Apple microcomputers (CS). **Kenneth L. Ratslaff.** 470

International chemical education conference, United States to host. **Bassam Z. Shakhashiri** and **Marjorie H. Gardner.** 451

Interpretive Experiments. edited by **Frank DeHaan**

Nuclear quadrupole resonance of R_3SbX_2 compounds. **T. B. Brill.** 519

Intramolecular electron transfer from coordinated ligand-radicals (Radiation Chemistry—State of the Art). **Morton Z. Hoffman** and **Kevin D. Whitburn.** 119

Introduction (Radiation Chemistry—The State of the Art. **Morton Z. Hoffman.** 83

Introduction to chemical information storage and retrieval (CS). **Peter F. Rusch.** 337

Introduction to the Sixth Biennial Conference on Chemical Education. 3

Introductory chemistry: Generality of the PSI approach, Teaching. **Colin S. Davies.** 686

Intuitive approach to the relative magnitude of the atomic coefficients in the π molecular orbitals of butadiene. **Belkacem Boulil, Paul Blaise,** and **Olivier Henri-Rousseau.** 29

Inventory controls (ST). **Miriam C. Nagel.** 1018

Iodine vapor, Resonance fluorescence and resonance raman spectroscopy of bromine and. **C. Frank Shaw, III.** 343

Ion exchange chromatography: An undergraduate biochemistry laboratory experiment, Separation of glycohemoglobins by. **Lance E. Jackman.** 77

Ion-molecule reactions in gas phase radiation chemistry (Radiation Chemistry—The State of the Art). **Clive Willis.** 88

Ionization and excitation in non-planar organic liquids (Radiation Chemistry-the State of the Art). **Sanford Lipsky.** 93

Ionizing radiation on mammalian cells, The effects of (Radition Chemistry—State of the Art). **John E. Biaglow.** 144

IR spectroscopy: Gaseous deuteroalkanes, An early laboratory introduction to. **Loren L. Braun** and **Raymond L. Law.** 79

Iron by atomic absorption in vitamin-mineral tablets, Determination of. **Robert P. Pinnell** and **Andrew W. Zanella.** 444

Isomerization: An undergraduate inorganic kinetics experiment, Base-catalyzed linkage. **W. G. Jackson, G. A. Lawrence, P. A. Lay** and **A. M.** Sargeson. 734

Isomers of octahedral coordination complexes (CS). **Richard Cornelius.** 552

Isotopic exchange in Prussian blue. **A. K. Bonnette, Jr.,** and **S. E. Gandy.** 355

Italian high school students, The understanding of the atomic orbital concept by. **R. Cervellati** and **D. Perugini.** 568

Italian secondary school students, An investigation of Piagetian stages in (CURR). **Paolo Violino** and **Beatrice Semino Di Giacomo.** 639

IUPAC—committee on teaching of chemistry: Report to USA. **William B. Cook.** 45

J

Joule-Thomson coefficients, A virial treatment of the Joule and. **Thomas R. Rybolt.** 620

K

Kekule, Friedrich August (PROFILES). **Enid S. Lipeles.** 624

KEMGAM: A chemical adventure (CS). **Richard T. Carman.** 695

Kinetic aspects relevant to contemporary analytical chemistry, Some. **Horacio A. Mottola.** 309

Kinetics, Computer-assisted data analysis of enzyme (CS). 242

Kinetics courses, Simulation methods in (CS). **Frances A. Houle** and **Don L. Bunker.** 405

Kinetics.

Amperometric determination of phenol bromination kinetics. 823

BASIC version of the stiffly stable, gear numerical integrator (CS). 408

Base-catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment. 734

Catalysis by micelles and by cycloamyloses: A comparative set of kinetic experiments. 584

Changing conceptions of activation energy. 612

Driving force of addition and elimination reactions clarified through the Hellmann-Freynman Theorem. 615

Menschutkin reaction: A group experiment in a kinetic study. 282

Non-linear least-squares optimization of parameters for first-order kinetics on programmable calculators (CS). 696

S_N1S_N2-Graphics to improve analysis of organic kinetics (CS). 693

Simulation of first-order kinetic mechanisms (CS). 409

Statistical note on the time lag method for second-order kinetic rate constants. 588

Stopped flow experiment illustrating micelle effects. 586

Study of the kinetics of the substitution reactions of square planar platinum(II) complexes as monitored by conductance measurements. 589

What is the rate-limiting step of a multistep reaction? 32

L

Lab, Further thoughts on the integrated (LTE). **R. A. Bailey** and **J. W. Zubrick.** 368

Laboratory achievement, Effect of TA background on student. **David L. Monts** and **Miles Pickering.** 768

Laboratory aids for visually handicapped chemistry students, High technology. **David Lunney** and **Robert C. Morrison.** 228

Laboratory—an alternative, The open (VIEW). 794

Laboratory, Application of the TRS-80 in the classroom and the (CS). **Edward T. Gray, Jr.** and **Harry J. Workman.** 239

Laboratory, Carcinogens and mutagens in the undergraduate (SAFETY). **Joy Melnikow, James R. Keefe** and **R. L. Bernstein.** A11

Laboratory experience, Scientific method through. **Allen L. Hanson.** 434

Laboratory Experiments

Amperometric determination of phenol bromination kinetics. 823

Analysis of analgesic mixtures for organic lab. 818

Base-catalyzed linkage isomerization: An undergraduate inorganic kinetics experiment. 734

Biochemistry of the muscle contraction process. 442

Catalysis by micelles and by cycloamyloses: A comparative set of kinetic experiments. 584

Complete conductance equation of 1-1 electrolytes and the programmable TI 59 calculator (CS). 245

Conductimetric-potentiometric titration. 656

Continuous variation study of heats of neutralization. 730

Determination of iron by atomic absorption in vitamin-mineral tablets. 444

Determination of the extraction constant for zinc pyrrolidinecarbodithioate. 580

Determination of the oxygen content of air. 804

Evaluation of experimental data. 509

Experimental introduction to stoichiometry (50 MIN). 192

Filtering technique: A quantitative evaluation. 73

General acid catalysis: A flexible experiment, adaptable to student ability and various teaching approaches. 738

Hemoglobin experiments. 75

Infrared spectrum of methanol: A first-year student experiment. 809

Interfacing and data collection with the TRS-80 (CS). 241

Laboratory experiment on vibrational spectroscopy of CS_2. 582

Laser-induced molecular fluorescence: A physical chemistry experiment. 438

Liquid chromatographic determination of nitroanilines: An experiment for the quantitative analysis laboratory. 820

Luminescent processes elucidated by simple experiments on ZnS. 806

Menschutkin reaction: A group experiment in a kinetic study. 282

Mossbauer spectroscopy experiment. 515

Nuclear quadrupole resonance of R_3SbX_2 compounds (IE). 519

Oxidation of cyclohexanol to cyclohexanone by sodium hypochlorite. 824

Photoacoustic microscopy (PAM) experiment. 812

Preparation of a synthetic plant hormone. 76

Protein denaturation: A physical chemistry project lab. 513

Reactions of a dinitrogen complex of molybdenum: Formation of a carbon-nitrogen bond. 728

Recycling analytical samples. 742

Rubber elasticity—a physical chemistry experiment. 285

Separation of glycohemoglobins by ion exchange chromatography: An undergraduate biochemistry laboratory experiment. 77

Solvay process experiment updated (TF). 1035

Stereospecificity of NAD^+/NADH reactions: A project experiment for advanced undergraduates. 816

Stopped flow experiment on micelles' influence on kinetics. 586

Study of the kinetics of the substitution reactions in square planar platinum(II) complexes as monitored by conductance measurements. 589

Synthesis of dinitrogen and dihydrogen complexes of molybdenum. 727

Vinyl acetate content of packaging film: A quantitative infrared experiment. 741

Laboratory guidelines for a complete safety audit of the academic chemistry (SAFETY). **Safety Committee of the New York Section of the American Chemical Society.** A361

Laboratory hood studies (SAFETY). **W. G. Mikell** and **L. R. Hobbs.** A165

Laboratory instruction for the motor impaired. **Ian D. Brindle, Jack M. Miller, Mary F. Richardson, Walter Balenovich, Meinhart Benkel,** and **Tony Biernacki.** 232

Laboratory instruction in high school chemistry: A historical survey. The purpose. **B. P. Kapuscinski.** 194

Laboratory introduction to IR spectroscopy: Gaseous deuteroalkanes, An early. **Loren L. Braun** and **Raymond L. Law.** 79

Laboratory platform for the mobility handicapped, A rolling. **John T. Moore** and **Waymon Blair.** 221

Laboratory simulations that include experimental error (CS). **Dwight C. Tardy.** 407

Lagormorpha enantiomorphs—simple stereomodels (LTE). **James M. Garrett, Bruce A. Henry** and **Charles R. Cates.** 448

Laser-induced molecular fluorescence: A physical chemistry experiment. **Joel Tellinghuisen.** 438

Lasers, A topics course on chemical application of. **William F. Coleman.** 652

Lead (CM). **Helen M. Stone.** 722

Learning Activities. edited by **Tom Tipton**

A classroom learning cycle: Using diagrams to classify matter. **Helen J. James** and **Samuel L. Nelson.** 476

Building a periodic table. **Linda S. Fowler.** 634

Learning cycle: Using diagrams to classify matter, A classroom (LA). **Helen J. James** and **Samuel L. Nelson.** 476

Least-square optimization of parameters for first-order kinetics on programmable calculators, Non-linear (CS). **Domenico De Marco, Athos Bellomo** and **Alessandro De Robertis.** 696

Lecture demonstration, A modified thermit (TD). **George B. Kauffman.** 802

Lecture demonstration model of the quantum mechanical atom, A (TD). **George Wiger** and **Melvin L. Dutton.** 801

Lecture Demonstrations (see also *Tested Demonstrations*)

"Chemical fountain": An old experiment in a new setting. 68

Classical demonstration performed to a new beat. 635

Detection of carbon monoxide in tobacco smoke using molybdosilicate (TS). 633

Efficiency of orbital overlap: Visual demonstration. 757

Oscillations. 575

Simple gas chromatography demonstration. 41

White ammonia fountain. 498

Let's get the heck out of here! (AA) **Alvan D. White.** 645

Ligand-radicals, Intramolecular electron transfer from coordinated (Radiation Chemistry—State of the Art). **Morton Z. Hoffman** and **Kevin D. Whitburn.** 119

Linear molecules, Plus and minus states of. **Frank L. Pilar.** 758

Liquid and gas chromatography, An inexpensive microcomputer-based data system for (CS). **Charles B. Pate** and **Harvey B. Herman.** 244

Liquid chromatographic determination of nitroanilines: An experiment for the quantitative analysis laboratory. **Frederick F. Cantwell** and **David W. Brown.** 820

Lonsdale and the planarity of the benzene ring, Kathleen (SBS). **Maureen M. Julian.** 365

Luminescent processes elucidated by simple experiments on ZnS. **R. Schwankner, M. Eiswirth** and **H. Venghaus.** 806

M

Macromolecules: Principles and applications, Stereochemistry and. **Roderic P. Quirk.** 540

Magnets to visualize sequences of peptides, proteins, and nucleic acids, An aid to molecular sequence studies: Use of ceramic. **Berne L. Jones** and **Karl J. Kramer.** 72

Mammalian cells, The effects of ionizing radiation on (Radiation Chemistry-State of the Art). **John E. Biaglow.** 144

Marijuana: Chemistry in the social service curriculum, Hashish and. **Uri Zoller** and **Shoshana Weiss.** 42

Maryland Conference, Recommendations for the. **M. J. Frazer.** 454

Math Methods

BASIC version of the stiffly stable, gear numerical integrator (CS). 408

Boltzmann distribution and Boltzmann's hypothesis. 603

Computer program to calculate alkalinity via Gran's plot method (CS). 555

Factorization method and its applications in quantum chemistry. 383

Improved glass rod method for finding the tangent of a curve. 518

Molecular parameters of diatomic molecules: A programmable calculator program. 610

Molecular term symbols (CEC). 431

Radial probability density and normalization in hydrogenic atoms. 617

Roothaan's method in one-dimension. 618

Sequential decision process for drug analysis. 462

Simplified derivations of the Stokes and Einstein equations. 250

Statistical note on the time lag method for second-order kinetic rate constants. 588

Virial treatment of the Joule and Joule-Thomson coefficients. 620

Mathematical techniques to chemistry, Teaching chemometrics: A course on application of (CS). **Michael F. Delaney** and **F. Vincent Warren, Jr.** 646

Mathematics readiness test for prospective chemistry students, A. **Rence L. Weisman.** 564

Matter, chemical wastes and the law of conservation of (AA). **John W. Hill.** 996

Mechanical analog of surface pressure, A. **Melvin P. Miller.** 197

Mechanisms, Orbital topology and reaction. **Ralph G. Pearson.** 753

Media, gadgets (Report, Sixth Biennial Conference on Chemical Education. 13

Mendeleev as a speculator (SBS). **Jan W. van Spronsen.** 790

Mendeleev's discovery of the periodic law (SBS). **R. F. Trimble.** 28

Menschutkin reaction: A group experiment in a kinetic study, The. **P. W. C. Barnard** and **B. V. Smith.** 282

Metal ions, Rules for coordination number of (CEC). **R. Thomas Myers.** 681

Metal ions in unusual valency states (Radiation Chemistry—State of the Art). **Robin M. Sellers.** 114

Metalwork and chemical technology, artistic (CP). **Charles D. Mickey.** 315

Meter, A simple capillary flow. **Joseph W. Bozzelli** and **Jonathan Snyder.** 522

Methanol: A first-year student experiment, Infrared spectrum of. **Garth Boehm** and **Mark Dwyer.** 809

Metropolitan State College, Occupational health and safety program (SAFETY). **Fred M. Dewey.** A93

Micelles and by cycloamyloses: A comparative set of kinetic experiments, Catalysis by. **I. Garcia-Mateos, M. A. Herraez, M. Rodrigo, L. J. Rodriguez** and **M. M. Velazquez.** 584

Micelles on reaction kinetics: A convenient stopped-flow experiment: Demonstrating the influence of. **Vincent C. Reinsborough** and **Brian H. Robinson.** 586

Microcomputer-controlled gamma scintillation spectrometer, A (CS). **Joseph W. Long.** 550

Microcomputer graphics to teach quantum theory, Using (CS). **Frank Rioux.** 553

Microcomputer-simulated acid-base titration (CS). **Paul B. Kelter** and **James D. Carr.** 48

Microcomputer simulation of lab instruments (CS). **G. L. Breneman.** 410

Microcomputer use, A simple Huckel molecular orbital computer program written in BASIC for (CS). **Barrie M. Peake** and **Roger Grauwmeijer.** 692

Microcomputers: A brief guide for the scientific user of S-100, TRS-80, PET, and Apple microcomputer, Interfacing (CS). 470

Microprocessor-simulated mass spectrometer, A (CS). **John C. Traeger.** 411

Midgley: From the periodic table to production, Dr. Thomas (PROFILES). **Miriam C. Nagel.** 496

Millionaire—get with the action! Be a (AA). **Alvan D. White.** 645

Mnemonics, In search of. **Ashok Kumar Goyal.** 288

Mobility handicapped, A rolling laboratory platform for the. **John T. Moore** and **Waymon Blair.** 221

Mobility-handicapped individuals in the college chemistry curriculum: Students, teachers, and researchers. **Todd A. Blumenkopf, Anne Barrett Swanson** and **Robert P. Larsen.** 213

Model of the quantum mechanical atom, A lecture demonstration model of the (TD). **George Wiger** and **Melvin L. Dutton.** 801

Model to demonstrate acid-base conjugate pairs, A physical (EXAM). **Robert W. Naylor.** 1017

Models. Media, gadgets (Report, Sixth Biennial Conference on Chemical Education). 13

Moire pattern analogy to electron motion, A (AA). **James R. Bard.** 480

Molecular models, Organic stereochemistry. An undergraduate exercise with. **William S. Murphy.** 504

Molecular orbital computer program written in BASIC for microcomputer use, A simple Huckel (CS). **Barrie M. Peake** and **Roger Grauwmeijer.** 692

Molecular orbitals of butadiene, An intuitive approach to the relative magnitude of the atomic coefficients in the π. **Belkacem Boulil, Paul Blaise,** and **Olivier Henri-Rousseau.** 29

Molecular parameters of diatomic molecules: A programmable calculator program. **Jose Miguel Gallego Garcia.** 610

Molecular sequence studies: Use of ceramic magnets to visualize sequences of peptides, proteins, and nucleic acids, An aid to. **Berne L. Jones** and **Karl J. Kramer.** 72

Molecular term symbols (CEC). **A. F. Leung, S. P. So** and **Wai-kee Li.** 431

Molybdenum, Synthesis of dinitrogen and dihydrogen complexes of. **Leonard J. Archer, T. Adrian George** and **Mark E. Noble.** 727

Molybdenum: Formation of a carbon-nitrogen bond, Reactions of a dinitrogen complex of. **David C. Busby, Carol M. Fendrick** and **T. Adrian George.** 728

More quickies (TING). **Milton H. Rosenberg.** 994

Mossbauer spectroscopy, A physical chemistry experiment in. **William H. Armstrong, Ernest E. Dorflinger, Owen T. Anderson,** and **Bennet R. Willeford, Jr.** 515

Motion in viscous liquids: Simplified derivations of the Stokes and Einstein equations. **Max A. Lauffer.** 250

Motivational impact of bonus system grading. **David L. Monts** and **Miles Pickering.** 43

Motor impaired, laboratory instruction for the. **Ian**

D. Brindle, Jack M. Miller, Mary F. Richardson, Walter Balenovich, Meinhart Benkel and **Tony Biernacki.** 232
Muscle contraction process: An undergraduate laboratory experiment using viscosity to follow the progress of a reaction, The biochemistry of the. **James F. Belliveau, Geard P. O'Leary, Jr.,** and **Harry Hajian.** 442
Mutagens in the undergraduate laboratory, Carcinogens and (SAFETY). **Joy Melnikow, James R. Keeffe** and **R. L. Bernstein.** A11

N

NAD+/NADH reactions: A project experiment for advanced undergraduates, Stereospecificity of. **Jonathan S. Lowrey, Thomas A. Evans** and **Shan S. Wong.** 816
Neutralization, A continuous variation study of heats of. **Dennis W. Mahoney, Joyce A. Sweeney, Derek A. Davenport** and **Richard W. Ramette.** 730
Neutrography: particles versus waves (AA). **Ronald DeLorenzo.** 327
New courses (Report, Sixth Biennial Conference on Chemical Education). 16
Nigeria, The need for cooperation between university chemical education and industry in (CE). **Durojaiye A. Ajeyalemi.** 361
Nitroanilines: An experiment for the quantitative analysis laboratory, Liquid chromatographic determination of. **Frederick F. Cantwell** and **David W. Brown.** 820
Nitroglycerine: Its preparation and therapeutic utility, The discovery of (SBS). **Natalie I. Foster** and **Ned D. Heindel.** 364
Nomenclature and formula writing, A versatile program for drill in inorganic (CS). **T. Cassen.** 49
Nomenclature drill, Computerized organic (CS). **John K. Estell.** 47
Non-polar organic liquids (Radiation Chemistry—State of the Art). **Sanford Lipsky.** 93
Nonacademic chemistry course, Fifteen years with a (VIEW). **C. LeRoy Darlington.** 711
Nonscience major, Chemistry and detective fiction: An interdisciplinary program for the. **Dominick A. Labianca** and **William J. Reeves.** 683
Notation confusion in volume ratio dilution. **Patrick L. Beaulieu** and **Terry S. Woodin.** 740
Notation for order of addition. **J. H. Niewahner.** 461
Nuclear quadrupole resonance of R3SbX2 compounds (IE). **T. B. Brill.** 519
Nucleic acids, An aid to molecular sequence studies: Use of ceramic magnets to visualize sequences of peptides, proteins, and. **Berne L. Jones** and **Karl J. Kramer.** 72

O

Oatmeal sticks to your ribs, Why (AA). **Ronald DeLorenzo.** 787
Objectives, Chemistry basic learning. **John P. Rouse.** 714
Occupational health and safety program at Metropolitan State College (SAFETY). **Fred M. Dewey.** A93
Octahedral coordination complexes, Isomer of (CS). **Richard Cornelius.** 552
Olympics, Organizing a high school chemistry. **Virginia W. Fisher.** 720
One-Dimension, Roothaan's method in. **Donald K. Harriss** and **Frank Rioux.** 618
Open laboratory—an alternative, The (VIEW). **David W. Crane.** 794
Opportunities in Continuing Education. edited by **Raymond D. Bangs** and **Ethel L. Schultz**
Ideas for professional development—your wildest wish. 427
Introducing opportunities in continuing education and its editors. 189
Some opportunities for the summer of 1981. 427
OPTSCAN and GRADE—automated grading and record keeping (CS). **R. J. Munn, J. M. Stewart, M. Katherine Pagoaga** and **Timothy C. I. Munn.** 694
Orbital drawings, On. **Carl W. David.** 377
Orbital overlap: Visual demonstration, Efficiency of. **Robert Rothchild.** 757
Orbital topology and reaction mechanisms. **Ralph G. Pearson.** 753
Orbitals of butadiene, An intuitive approach to the relative magnitude of the atomic coefficients in the π. **Belkacem Boulil, Paul Blaise** and **Olivier Henri-Rousseau.** 29
Order of addition, Notation for. **J. H. Niewahner.** 461
Organic Chemistry
Analysis of analgesic mixtures: An organic chemistry experiment. 818
Bio-organic mechanisms II: Chemoreception. 455
Calculation and specification of the multiple chirality displayed by sugar pyranoid ring structures. 599
Chemicals from wood and other biomass: Part I: future supply of organic chemicals (CHEM I). 465
Conjugate and nonconjugate reduction with $LiAlH_4$ and $NaBH_4$ (TF). 628
Cyclohexane as a cryoscopic solvent (SAFETY). A133
Efficiency of orbital overlap: Visual demonstration. 757
Friedrich August Kekule (PROFILES). 624
Gas chromatography demonstration for classroom. 41
How hazardous is synthetic chemistry? 503
Hydrogen electrons in aqueous-organic media. 576
Interpretation of an infrared spectrum on a minicomputer (CS). 554
Intuitive approach to the relative magnitude of the atomic coefficients in the π molecular orbitals of butadiene. 29
Kathleen Lonsdale and the planarity of the benzene ring (SBS). 365
Method for preparing solid compounds for infrared analysis. 80
Molecular models use in teaching stereochemistry. 504
More on effects controlling carboxylic acidity (TF). 778
Nomenclature drill computerized (CS). 47
Orbital topology and reaction mechanisms. 753
Oxidation of cyclohexanol to cyclohexanone by sodium hypochlorite. 824
PMR spectroscopy on a PET (CS). 692
R. B. Warder and the kinetics of saponification (SBS). 559
Role of student development level in teaching. 484
Rubber reflux condenser for a test tube. 357
Silver mirror demonstration. 655
Simple Huckel molecular orbital computer program written in BASIC for microcomputer use (CS). 692
S_N1S_N2—Graphics to improve analysis of organic kinetics (CS). 693
Spectroscopy at the introductory level. 511
Stereochemical instructional tool. 31
Stereochemistry and macromolecules: Principles and applications. 540
Stereospecificity of NAD+/NADH reactions: A project experiment for advanced undergraduates. 816
Structural information from liquid-and solid-phase ESR: The example of triphenyl-substituted radicals (C6H5)3A of group IVB elements. 389
Structure-resonance theory for pericyclic transition states. 371
Sulfur (CM). 468
Symposium for students. 490
Synthesis design and the computer (CS). 798
Synthetic materials in art conservation. 321
Organic chemistry in current textbooks, Treatment of industrial (IND). **Kenneth E. Kolb** and **Doris K. Kolb.** 557
Organic colorants in art objects by solution spectrophotometry: Pigments, Identification of. **Fred W. Billmeyer, Jr., Romesh Kuman** and **Max Saltzman.** 307
Organic liquids, Ionization and excitation in nonpolar (Radiation Chemistry—the State of the Art). **Harold A. Schwarz.** 93
Organized assemblies, Radiation chemistry in (Radiation Chemistry—State of the Art). **J. K. Thomas** and **T. S. Chen.** 140
Organizing a high school chemistry olympics. **Virginia W. Fisher.** 720
Organometals, Controlled release applications of. **John S. Thayer.** 764
Origin and development of cooperative education at Thomas More College (CE). **Sr. M. Casimira Mueller.** 707
Oscillations (IDEAS). **George W. Stapleton.** 574
Other aspects of the conference (Report, Sixth Biennial Conference on Chemical Education. 18
Oven with very little thermal inertia, A versatile. **P. Asay, P. M. Marquaire, P. Pommier** and **G. Scacchi.** 441
Overhead projector demonstration, Cathodic protection: An. (TD). **Charles R. Ward** and **Thomas J. Greenbowe.** 505
Overhead transparencies, Preparation of posters and (CS). **T. D. L. Pearson, M. J. Greer** and **J. N. Demas.** 691
Oxidation and reduction (AA). **Alvan D. White.** 645
Oxidation of cyclohexanol to cyclohexanone by sodium hypochlorite. **Norbert M. Zuczek** and **Paul S. Furth.** 824
Oxygen content of air, A general chemistry experiment for the determination of the. **James P. Birk, Larry McGrath** and **S. Kay Gunter.** 804

P

p-chlorophenoxyacetic acid—preparation of a synthetic plant hormone. **William F. Wood.** 76
Packaging film: A quantitative infrared experiment,

The vinyl acetate content of. **K. N. Allpress, B. J. Cowell** and **A. C. Herd.** 741
Painting, A short history of the chemistry of. **Harriet G. Friedstein.** 291
Partition function for $^{16}O_2$, The rotational levels and rotational (TF). **Ian J. McNaught.** 719
Pathogens, Electrochemical destruction of (IN). **W. Conard Fernelius.** 558
Pauli (1900–1958): A brief anecdotal biography, Wolfgang (PROFILES). **Roger R. Festa.** 273
Peptides, proteins, and nucleic acids, An aid to molecular sequence studies: Use of ceramic magnets to visualize sequences of. **Berne L. Jones** and **Karl J. Kramer.** 72
Pericyclic transition states, Structure-resonance theory for. **William C. Herndon.** 371
Periodic law, Mendeleev's discovery of the (SBS). **R. F. Trimble.** 28
Periodic law, Quantum chemistry via the. **S. M. Blinder.** 761
Periodic puzzles. **Colin H. L. Kennard.** 772
Periodic table, Anomalies in the. **F. H. Firsching.** 478
Perkin, pioneer in color, Sir William Henry (PROFILES). **Miriam C. Nagel.** 305
Permanganate volcanoes: Full principles ahead!, Damn the (PO). **Frank L. Pilar.** 803
PET, and Apple microcomputers, Interfacing microcomputers, Interfacing microcomputers: A brief guide for the scientific user of S-100, TRS-80 (CS). **Kenneth L. Ratzlaff.** 470
pH meter, An inexpensive (IF). **Dennis Sievers.** 281
Philosophy of Education
Admitting ambiguity (PO). 334
Apes and peacocks too: A report to an academy. 671
Damn the permanganate volcanoes: Full principles ahead! (PO). 803
Popper's epistemology as a pedagogic and didactic principle. 564
Scenario (PO). 182
Symposium on the contemporary chemical industry and chemical education: A report (IND). 432
The grade thirteen syndrome (PO). 717
The implicit curriculum (PO). 560
Photoacoustic microscopy (PAM) experiment, A simple. **Elizabeth H. Mei** and **Edward M. Eyring.** 812
Photovoltaic cells, Solar (CP). **Charles D. Mickey.** 418
Physical Chemistry
Amperometric determination of phenol bromination kinetics. 823
Analytic potential functions for diatomic molecules. 37
Bolzmann distribution and Boltzmann's hypothesis. 603
Catalysis by micelles and by cycloamyloses: A comparative set of kinetic experiments. 584
Changing conceptions of activation energy. 612
Colmolality (colmoles). 619
Complete conductance equation of 1-1 electrolytes and the programmable TI 59 calculator (CS). 245
Computation of dissociation energies of diatomic molecules. 609
Computer-assisted data analysis of enzyme kinetics (CS). 242
Computer drill in thermodynamics (CS). 554
Computer program system for physical chemistry laboratory (CS). 551
Conductimetric-potentiometric titration for an advanced laboratory. 656
Continuous variation study of heats of neutralization. 730
Driving force of addition and elimination reactions clarified through the Hellmann-Feynman theorem. 615
Entropy as a driving force (TD). 280
Evaluation of experimental data: A laboratory exercise. 509
Geneal acid catalysis: A flexible experiment, adaptable to student ability and various teaching approaches. 738
Gibbs function versus degree of advancement: The Gibbs valley. 21
Inequality of decision on species instability. 26
Inferring molecular structure from thermodynamic data. 247
Integral of ξ^r over harmonic oscillator wave functions. 39
Laboratory experiment on vibrational spectroscopy of CS2. 582
Laser-induced molecular fluorescence: A physical chemistry experiment. 438
Luminescent processes elucidated by simple experiments on ZnS. 806
Menschutkin reaction: A group experiment in a kinetic study. 282
Molecular parameters of diatomic molecules: A programmable calculator program. 610
Mossbauer spectroscopy experiment. 515
Plus and minus states of linear molecules. 758
Protein denaturation: A physical chemistry project lab. 513
Quantum chemistry via the periodic law. 761
Radial probability density and normalization in hydrogenic atoms. 617
Roothaan's method in one-dimension. 618
Rubber elasticity—a physical chemistry experiment. 285
Simplified derivations of the Stokes and Einstein equations. 250
Solar photovoltaic cells (CP). 418
Stopped flow experiment on micelles influence on kinetics. 586
Temperature and unique energy level populations. 605
Timed constant current source for calorimeter calibration. 594
Two computer programs to introduce X-ray crystallography (CS). 555
Versatile oven with very little thermal inertia. 441
Virial treatment of the Joule and Joule-Thomson coefficients. 620
What is the rate-limiting step of a multistep reaction? 32
Wolfgang Pauli (1900–1958): A brief anecdotal biography (PROFILES). 273
Physical chemistry and electrochemistry, An audo-tutorial approach to the teaching of. **Stephen K. Lower.** 773
Physically Handicapped, Teaching Chemistry to the (March issue)
A rolling laboratory platform for the mobility handicapped. 221
Attitudinal barriers for the physically handicapped. 205
Chemistry and the hearing impaired. 209
Chemistry and the visually handicapped. 206
Chemistry and the visually impaired: Available teaching aids. 222
High technology laboratory aids for visually handicapped chemistry students. 228
Laboratory instruction for the motor impaired. 232
Mobility-handicapped individuals in the college chemistry curriculum: Students, teachers and researchers. 213
Safety considerations for physically handicapped individuals in the chemistry laboratory. 234
Teaching aids for visually handicapped students in introductory chemistry courses. 226
Physiological effects of X-rays, An early report on the (SBS). **D. S. Tarbell, A. T. Tarbell,** and **J. H. Hamilton.** 275
Piagetian stages in Italian secondary school students, An investigation of (CURR). **Paolo Violino** and **Beatrice Semino Di Giacomo.** 639
Pigments, Identification of organic colorants in art objects by solution spectrophotometry. **Fred W. Billmeyer, Jr., Romesh Kumar** and **Max Saltzman.** 307
Pipet bulb, A versatile. **H. D. De Witt.** 733
Pipet delivery device, Inexpensive. **Adelbert M. Knevel.** 663
Plan for establishing and maintaining the high school-college communication pipeline. **Donald B. Phillips.** 632
Plan for safety (ST). **Miriam C. Nagel.** 654
(Phenylcyclohexyl)piperidine hydrochloride, 1-: A profile of an abused drug. **Dominick A. Labianca.** 664
Plant hormone, *p*-Chlorophenoxyacetic acid—preparation of a synthetic. **William F. Wood.** 76
Platform for the mobility handicapped, A rolling laboratory. **John T. Moore** and **Waymon Blair.** 221
Plotting molecules and crystal structures, Interactive computer program system for (CS). **M. L. Dheu** and **S. Perez.** 552
Plus and minus states of linear molecules. **Frank L. Pilar.** 758
PMR spectroscopy on a PET (CS). **Glenn E. Palmer.** 692
Polymer Chemistry
Simplified derivations of the Stokes and Einstein equations. 250
Stereochemistry and macromolecules: Principles and applications. 540
Synthetic materials in art conservation. 321
Polymer chemistry in America—the early days, The development of (CHS). **C. S. Marvel.** 535
Polymer chemistry in Europe and America—how it all began (CH). **Herman Mark.** 527
Polymer Chemistry, State of the Art Symposium (November issue)
Introduction to polymer chemistry. 837
Chain reaction polymerization. 844
Step-growth polymerization. 862
Molecular weight and molecular weight distributions in synthetic polymers. 867
The morphology of crystalline polymers. 879
An overview of the basic rheological behavior of the polymer fluids with an emphasis on polymer melts. 880
Mechanical properties of polymers. 892
Rubber elasticity. 898
Field test evaluation report on introduction to polymer chemistry. 904
EMMSE: Education modules for materials science and engineering. 908
Macromolecules in undergraduate physical chemistry. 911
Block and graft copolymers. 914
Organnometallic polymers. 921
High-strength/high modulus fibers from aromatic polymers. 935
Ion-containing polymers: Ionomers. 938
Interpretations of polymer-polymer miscibility. 944
Polymers for extreme service conditions. 951
Polymer former, Benzene—The (IND). **Harold Witteoff.** 270
Polymer science, Classroom paticipation—introduction to (CEC). **Leo H. Bowman.** 548
Poor laboratory practices depicted on child welfare stamp (SAFETY). **Robert F. Drake.** A293
Popper's epistemology as a pedagogic and didactic principle, or: Let them make more mistakes. **W. Derkse.** 565
Posters and overhead transparencies, Preparation of (CS). **T. D. L. Pearson, M. J. Greer** and **J. N. Demas.** 691
Potential functions for diatomic molecules: Some limitations, Analytic. **John S. Winn.** 37
Power plants, The radiation hazard of coal-fired. **Jerrol Windbigler.** 500
Power supply for a Carle Basic TM Model 6500 gas chromatograph, Detector. **B. Olesen, H. R. Pinnick, Jr.,** and **R. Dunlap.** 595

Practical applications of calculator simulations (CS). **David Holdsworth.** 697
Practical chemistry course, A (CURR). **George R. Powers.** 1015
Preparation of buffer solutions, On the. **Bruce M. Thomson** and **Michael A. Kessick.** 743
Preservation of food, Radiation chemistry and the radiation (Radiation Chemistry—State of the Art). **Irwin A. Taub.** 162
Pressure and the exploding beverage container (EXAM). **Robert R. Perkins.** 363
Principles and techniques of radiation chemistry (Radiation Chemistry—the State of the Art). **Leon M. Dorfman.** 84
Probability density and normalization in hydrogenic atoms. **Luis Lain, Alicia Torre** and **Jose M. Alvarino.** 617
Problem solving in science: Part II: Learning problem solving in a thermodynamics course, Teaching and learning. (CS). **C. T. C. W. Mettes, A. Pilot, H. J. Roossink** and **H. Kramers-Pals.** 51
Problems with chemistry problems: Student perception and suggestions. **Robert G. Silberman.** 1036
Processing: The industrial applications of radiation chemistry, Radiation (Radiation Chemistry—State of the Art). **Joseph Silverman.** 168
Profiles in Chemistry. edited by **Roger Festa** and **Miriam Nagel**
Charles W. Eliot: Chemist and teacher. **Sidney Rosen.** 1005
Dr. Thomas Midgley: From the periodic table to production. **Miriam C. Nagel.** 496
Friedrich August Kekule. **Enid S. Lipeles.** 624
Gay-Lussac: Chemist extraordinary. **R. P. Graham.** 789
Herman Frasch, sulfur king. **Miriam C. Nagel.** 60
Sir William Henry Perkin, pioneer in color. **Miriam C. Nagel.** 305
Wolfgang Pauli (1900–1958): A brief anecdotal biography. **Roger R. Festa.** 273
Program system for an undergraduate physical chemistry laboratory, A comprehensive computer (CS). **K. D. Snell, C. V. Braun, Jr.,** and **A. G. Keenan.** 551
Programmable TI 59 calculator, Complete conductance equation of 1-1 electrolytes and the (CS). **P. Rechberger** and **W. Linert.** 245
Programmable calculator program, Molecular parameters of diatomic molecules: **A. Jose Miguel Gallego Garcia.** 610
Programmable calculators, Non-linear least-squares optimization of parameters for first-order kinetics on (CS). **Domenico De Marco, Athos Bellomo** and **Alessandro De Robertis.** 696
Programmable pocket calculator, Analysis of student data: An illustration of the usefulness of an inexpensive. **Thomas P. Chirpick.** 436
Project experiment for advanced undergraduates, Stereospecificity of NAD/NADH reaction: **A. Jonathan S. Lowrey, Thomas A. Evans** and **Shan S. Wong.** 816
Project TEACH supplemented. **J. Edmund White.** 766
Properties of poly(methyl methacrylate) studied by radiation degradation: An interdisciplinary student experiment, Some (Radiation Chemistry-State of the Art). **D. J. T. Hill** and **J. H. O'Donnell.** 174
Prospector, Chemistry and the modern (CHEM I). **Thomas R. Neff.** 699
Protein denaturation: A physical chemistry project lab. **Miles Pickering** and **Robert H. Crabtree.** 513
Proteins, and nucleic acids, An aid to molecular sequence studies: Use of ceramic magnets to visualize sequences of peptides. **Berne L. Jones** and **Karl J. Kramer.** 72
Provocative Opinion
Admitting ambiguity. **A. Truman Schwartz.** 334
Alternative viewpoint on energy options. **Buddhadev Sen.** 19
Damn the permanganate volcanoes: Full principles ahead!. **Frank L. Pilar.** 803
How hazardous is synthetic chemistry? **Terry I. Quickenden.** 503
Scenario. **Harold Koch.** 182
The grade thirteen syndrome. **James J. Bohning.** 717
The implicit curriculum. **George F. Atkinson.** 560
Prussian blue, Isotopic exchange in. **A. K. Bonnette, Jr.,** and **S. E. Gandy.** 355
Prussian blue, an inorganic evergreen (TS). **Andreas Ludi.** 1013
PSI approach, Teaching introductory chemistry: Generality of the. **Colin S. Davies.** 686
Purpose of laboratory instruction in high school chemistry: A historical survey, The. **B. P. Kapuscinski.** 194
Puzzles, Periodic. **Colin H. L. Kennard.** 772
Pyranoid ring structures, Calculation and specification of the multiple chirality displayed by sugar. **Robert S. Shallenberger, Ronald E. Wrolstad** and **Laurie E. Kerschner.** 599

Q

Quantitative analysis, A new transfer flask for. **P. L. Gaus** and **Lori A. Pedersen.** 353
Quantitative analysis laboratory, Liquid chromatographic determination of nitroanilines: An experiment for the. **Frederick F. Cantwell** and **David W. Brown.** 820
Quantum chemistry, The factorization method and its applications in. **Ranjan Das** and **A. B. Sannigrahi.** 383
Quantum chemistry via the periodic law. **S. M. Blinder.** 761
Quantum theory, Using microcomputer graphics to teach (CS). **Frank Rioux.** 553
QUEST: CAIDI programs to set up and use question-and answer exercises (CS). **William F. Wood** and **Craig D. Kent.** 47

R

Radial probability density and normalization in hydrogenic atoms. **Luis Lain, Alicia Torre** and **Jose M. Alvarino.** 617
Radiation chemistry in organized assemblies (Radiation Chemistry—State of the Art). **J. K. Thomas** and **T. S. Chen.** 140
Radiation Chemistry, State of the Art Symposium
Electron spin resonance of radiation produced free radicals. 106
Free radical mechanisms in autoxidation processes. 125
Free radical reactions with simple biochemical systems. 131
Free radicals generated by radiolysis of aqueous solutions. 101
Intramolecular electron transfer from coordinated ligand-radicals. 119
Introduction to the State of the Art Symposium. 83
Ion-molecule reactions in gas phase radiation chemistry. 88
Ionization and excitation in non-polar organic liquids. 93
Metal ions in unusual valency states. 114
Principles and techniques of radiation chemistry. 84
Radiation chemistry and the radiation preservation of food. 162
Radiation chemistry in organized assemblies. 140
Radiation processing: The industrial applications of radiation chemistry. 168
Radiation sensitization in cancer therapy. 156
Radiolytic damage to genetic material. 135
Redox properties of free radicals. 110
Some properties of poly(methyl methacrylate) studied by radiation degradation: An interdisciplinary student experiment. 174
The effects of ionizing radiation on mammalian cells. 144
Radiation hazard of coal-fired power plants, The. **Jerrol Windbigler.** 500
Radical generated by radiolysis of aqueous solutions, Free (Radiation Chemistry—State of the Art). **Harold A. Schwarz.** 101
Radical mechanisms in autoxidation processes, Free (Radiation Chemistry—State of the Art). **Michael G. Simic.** 125
Radical reactions with simple biochemical systems, Free (Radiation Chemistry—State of the Art). **J. Leslie Redpath.** 131
Radicals, Electron spin resonance of radiation produced free (Radiation Chemistry—State of the Art). **Michael D. Sevilla.** 106
Radiochemistry
A microcomputer-controlled gamma scintillation spectrometer (CS). 550
Isotopic exchange in prussian blue. 355
Neutrography: Particles versus waves (AA). 327
Radiolytic damage to genetic material (Radiation Chemistry—State of the Art). **John F. Ward.** 135
Raman spectroscopy of bromine and iodine vapor, Resonance fluorescence and resonance. **C. Frank Shaw, III.** 343
Rate-limiting step of a multistep reaction?, What is the. **Joseph R. Murdoch.** 32
Reaction rates, Temperature effect on (TD). **Robert Eliason** and **Terence McMahon.** 354
Reaction?, What is the rate-limiting step of a multistep. **Joseph R. Murdoch.** 32
Real World of Industrial Chemistry. edited by **W. Conard Fernelius** and **Harold Wittcoff**
Benzene—The polymer former. **Harold Wittcoff.** 270
Symposium on the contemporary chemical industry and chemical education: A report. **Jay A. Young.** 432
Treatment of industrial organic chemistry in current textbooks. **Kenneth E. Kolb** and **Doris K. Kolb.** 557
Recommendation for the Maryland Conference. **M. J. Frazer.** 454
Recorder-activated double set-point process controller, A. **Steven G. Platt** and **Donald E. Campbell.** 583
Recycling analytical samples. **Joyce A. Sweeney, Dennis W. Mahoney** and **Derek A. Davenport.** 742
Red cabbage and the electrolysis of water (TD). **James F. Skinner.** 1017
Redox equations by inspection, Balancing complex (CP). **Doris Kolb.** 642
Redox properties of free radicals (Radiation Chemistry—State of the Art). **P. Neta.** 110
Reflux condenser for a test tube, A rubber. **Dwight Ray Mowery.** 357
Report of the task force on the teaching of chemistry: Unique courses. **B. R. Siebring.** 481
Research over the past decade, A survey of undergraduate. **James N. Spencer** and **Claude H. Yoder.** 780
Resonance fluorescence and resonance raman spectroscopy of bromine and iodine vapor. **C. Frank Shaw, III.** 343

Resonance of R_3SbX_2 compounds, Nuclear quadrupole (IE). **T. B. Brill.** 519
Resonance theory for pericyclic transition states, Structure—**William C. Herndon.** 371
Resource center, Secondary school utilization of community colleges as a learning. **Jerry L. Smith.** 776
Retrieval, Introduction to chemical information storage and (CS). **Peter F. Rusch.** 337
Ring structures, Calculation and specification of the multiple chirality displayed by sugar pyranoid. **Robert S. Shallenberger, Ronald E. Wrolstad** and **Laurie E. Kerschner.** 599
Role of chemistry in firefighting. The (JOULES). **Emanuel G. Terezakis.** 698
Roothaan's method in one-dimension. **Donald K. Harriss** and **Frank Rioux.** 618
Rotational levels and rotation partition function for $^{16}O_2$, The. **Ian J. McNaught.** 719
Rubber elasticity—A physical chemistry experiment. **Morris Bader.** 285
Rules for coordination number of metal ions (CEC). **R. Thomas Myers.** 681

S

S-100, TRS-80, PET, and Apple microcomputers, Interfacing microcomputers: A brief guide for the scientific user of (CS). **Kenneth L. Ratzlaff.** 470
S-N bonds so rare in nature?, Why are. **Michael Davis** and **Jill L. Morris.** 760
Safety considerations for physically handicapped individuals in the chemistry laboratory. **Anne Barret Swanson** and **Norman V. Steere.** 234
Safety in the Chemical Laboratory. edited by **Malcolm M. Renfrew**
Carcinogen control in the chemical laboratory. **James S. Johnson.** A257
Carcinogens and mutagens in the undergraduate laboratory. **Joy Melnikow, James R. Keefe** and **R. L. Bernstein.** A11
Contact lenses in the laboratory. **David W. Kingston.** A289
Cyclohexane as a cryoscopic solvent. **Margaret J. Steffel.** A133
Guidelines for a complete safety audit of the academic chemistry laboratory. Safety Committee of the New York Section of the American Chemical Society. A000
Occupational health and safety program at Metropolitan State College. **Fred M. Dewey.** A93
Poor laboratory practices depicted on child welfare stamp. **Robert F. Drake.** A293
Laboratory hood studies. **W. G. Mikell** and **L. R. Hobbs.** A165
Safety: What do we really mean? **Howard H. Fawcett.** A45
Safety goggles, A method of financing. **Rudy Gerlach.** 479
Safety Tips. edited by **Miriam C. Nagel**
Chemical waste disposal. 825
Inventory controls. 1018
Plan for safety. 654
Sampling pump, An inexpensive, accurate air. **Paul Friedman.** 199
Saponification, R. B. Warder and the kinetics of (SBS). **D. S. Tarbell** and **A. T. Tarbell.** 559
Scenario (PO). **Harold Koch.** 182
School science review, The (IDEAS). **George W. Stapleton.** 575
Science and the fine arts (CB). **Jay A. Young.** 329
Science teaching and society, A report on (CURR). **Barbara B. Lewis.** 704
Scientific method through laboratory experience. **Allen L. Hanson.** 434
Scintillation spectrometer, A microcomputer-controlled gamma (CS). **Joseph W. Long.** 550
Sebasic acid from adipic acid electrochemically (IN). **Kenneth E. Kolb.** 558
Second-order kinetic rate constants, A statistical note on the time lag method for. **Lowell M. Schwartz.** 588
Secondary school utilization of community colleges as a learning resource center. **Jerry L. Smith.** 776
Separation of glycohemoglobins by ion exchange chromatography: An undergraduate biochemistry laboratory experiment. **Lance E. Jackman.** 77
Separation technology: I. Chromatography (CP). **Charles D. Mickey.** 997
Sequential decision-making process under conditions of uncertainty in drug analysis. **Ik-Whan Kwon** and **Joe H. Kim.** 462
Setting high standards (TING). **H. I. Feinstein.** 567
SI and conventional units, Student response to simultaneous instruction in. **Arthur E. Grosser.** 366
Significant figures, Another view of. **Charles R. Ward.** 616
Silver Mirror (TD). **Marwin Kemp.** 655
Silver chloride, Recycling. **Edwin Thall.** 561
Silver nitrate stains, Removal of. **Clair J. Cheer.** 201
Simualted mass spectrometer, A microprocessor—(CS). **John C. Traeger.** 411
Simulation game for decision-making (CS). **E. D. Cavin** and **Claudia S. Cavin.** 410
Simulation methods in kinetics courses (CS). **Frances A. Houle** and **Don L. Bunker.** 405
Simulation of first-order kinetic mechanisms (CS). **S. W. Orchard** and **M. B. Mooiman.** 409
Simulation of lab instruments, Microcomputer (CS). **G. L. Breneman.** 410
Simulations that include experimental error, laboratory (CS). **Dwight C. Tardy.** 407
Sixth Biennial Conference on Chemical Education, Report of. 2
Skills for chemistry: A pre-chemistry course, Basic. (JOULES). **Ralph R. Kreiser.** 636
Slide rule to complement limited function calculators, Use of a photocopies. **Paul M. Barelski.** 718
Slope of the line we calculate, And from the. **Richard J. Stolzberg.** 710
S_N1S_N2—Graphics to improve analysis of organic kinetics (CS). **Paul A. Dobosh.** 693
Snowed in (TING). **Roy D. Caton, Jr.** 66
Soap films, Demonstrating tetrahedral bonding using (TD). **John C. Whitmer.** 280
Sodium with water, Dramatic demonstration for a large audience: The formation of hydroxyl ions in the reaction of (TD). **Alan T. Hutton.** 506
Solar photovoltaic cells (CP). **Charles D. Mickey.** 418
Solids, liquids and mixtures, A permanent demonstration of vapor pressures of (TD). **George Deckey** and **Charles Marzzacco.** 725
Solvay process experiment, A practical (TF). **J. R. McKee** and **J. M. Kauffman**
Something New from the Past. **Joseph S. Schmuckler**
Academic-industrial interface: High school level. 497
A clock reaction . . . 183
A "take-home" experiment. 62
Atomic structure. **Maria Rosa Balaco.** 721
Chemical equations, moles and stoichiometry. **Ranjini Weerasooriya.** 792
Chemical equilibrium. 276
Chemistry and art. 326
Electrolytic conductivity. 62
Evaporation rate. 62
Heat of precipitation. 183
Mathematics in the chemistry classroom. 637
Maxwell's demon. 183
Oxidation reduction electrochemistry. 404
Phase change. 62
Solids. 62
The how and why of chemical reactions. 183
The role of kinetics in teaching . . . 183
Vapor pressure. 62
Species instability, Inequality of decision on. **Y. R. Luo.** 26
Spectacular gas density demonstration using methane bubbles (TD). **Robert Snipp, Bruce Mattson** and **Winters Hardy.** 354
Spectrometer, A microcomputer-controlled gamma scintillation (CS). **Joseph W. Long.** 550
Spectrometer, A microprocessor-simulated mass (CS). **John C. Traeger.** 411
Spectrophotometer, Interfacing and Apple II microcomputer to a UV-visible (CS). **G. Scott Owen, Deborah** and **Terry Green.** 690
Spectrophotometery: Pigments, Identification of organic colorants in art objects by solution. **Fred W. Billmeyer, Jr., Romesh Kumar** and **Max Saltzman.** 307
Spectroscopy in organic chemistry at the introductory level. **Jerome E. Gurst.** 511
Spectroscopy of bromine and iodine vapor, Resonance fluorescence and resonance raman. **C. Frank Shaw, III.** 343
Spectroscopy
Analytic potential functions for diatomic molecules. 37
Electron spin resonance of radiation produced free radicals (Radiation Chemistry—State of the Art). 101
Homemade, high pressure gas cell. 813
Infrared spectrum of methanol: A first-year student experiment. 809
Laboratory experiment on vibrational spectroscopy of CS2. 582
Photoacoustic microscopy (PAM) experiment. 812
Structural information from liquid- and solid-phase ESR: The example of triphenyl-substituted radicals (C6H5)3A of group IVB elements. 389
Vinyl acetate content of packaging film: A quantitative infrared experiment. 741
Spectroscopy: Gaseous deuteroalkanes, An early laboratory introduction to IR. **Loren L. Braun** and **Raymond L. Law.** 79
Spectroscopy on a PET, PMR (CS). **Glenn E. Palmer.** 692
Spectrum on a minicomputer, Interpretation of an infrared spectrum on a (CS). **James C. Howald** and **Francis L. Jones.** 554
Spooner, Sulfur, stereochemistry and the Reverend William Archibald. **Derek A. Davenport.** 682
Square planar platinum(II) complexes as monitored by conductance measurements, A study of the kinetics of the substitution reactions of. **James V. Marzik, Anthony D. Sabatelli, Paul J. Fitzgerald** and **Joseph E. Sarneski.** 589
Stains, Removal of silver nitrate. **Clair J. Cheer.** 201
Standard deviation, Calculators and (CS). **Randolph Bruce Huff** and **Kenneth Nolon Carter.** 49
Starship Chemterprise, Two voyages of the (CEC). **Rubin Battino.** 431
Statistical note on the time lag method for second-order kinetic rate constant, A. **Lowell M. Schwartz.** 588
Stereochemical instruction tool, A helpful. **Don England.** 31

Stereochemistry and macromolecules: Principles and applications. **Roderic P. Quirk.** 540
Stereochemistry and the Reverend William Archibald Spooner, Sulfur. **Derek A. Davenport.** 682
Stereochemistry of coordination compounds in the last fifty years, Some developments in the. **John C. Bailar, Jr.** 674
Stereochemistry: An undergraduate exercise with molecular models, Organic. **William S. Murphy.** 504
Stereospecificity of NAD^+/NADH reactions: A project experiment for advanced undergraduates. **Jonathan S. Lowrey, Thomas A. Evans** and **Shan S. Wong.** 816
Stiffly stable, gear numerical integrator, BASIC version of the (CS). **Richard J. Field.** 408
Stoichiometry, An experimental introduction to (50 MIN). **Michael J. Webb.** 192
Stokes and Einstein equations, Motion in viscous liquids: Simplified derivation of the. **Max A. Lauffer.** 250
Stopped-flow experiment, A convenient: Demonstrating the influence of micelles on reaction kinetics. **Vincent C. Reinsborough** and **Brian H. Robinson.** 586
Storage and retrieval, Introduction to chemical information (CS). **Peter F. Rusch.** 337
Story Behind the Story. edited by **John H. Wotiz**
An early report on the physiological effects of X-rays. **D. S. Tarbell, A. T. Tarbell,** and **J. H. Hamilton.** 275
Mendeleev as a speculator. **Jan W. van Spronsen.** 790
Mendeleev's discovery of the periodic law. **R. F. Trimble.** 28
R. B. Warder and the kinetics of saponification. **D. S. Tarbell** and **A. T. Tarbell.** 559
The ACS in San Francisco. **A. T. Tarbell** and **D. S. Tarbell.** 626
The discovery of nitroglycerine: Its preparation and therapeutic utility. **Natalie I. Foster** and **Ned D. Heindel.** 364
Structural information from liquid- and solid-phase ESR: The example of triphenyl-substituted radicals (C_6H_5)3A of group IVB elements. **M. Geoffroy** and **J. H. Hammons.** 389
Structure from thermodynamic data, Inferring molecular. **A. J. Kassman** and **S. A. Gregory.** 247
Structure-resonance theroy for pericyclic transition states. **William C. Herndon.** 371
Structures, Interactive computer program system for plotting molecules and crystal (CS). **M. L. Dheu** and **S. Perez.** 552
Student Evaluation
A mathematics readiness test for prospective chemistry students. 564
Computer-assisted test construction in chemistry (CS). 177
Motivational impact of bonus system grading. 43
OPTSCAN and GRADE-automated grading and record keeping (CS). 694
Student development level, Role of: The teaching of college chemistry. **Frank L. Wiseman, Jr.** 484
Student molecular model kit (AV). **Bob Atkins.** 278
Student response to simultaneous instruction in SI and conventional units. **Arthur E. Grosser.** 366
Substitution reactions of square planar platinum(II) complexes as monitored by conductance measurements. **James V. Marzik, Anthony D. Sabatelli, Paul J. Fitzgerald** and **Joseph E. Sarneski.** 589
Sugar pyranoid ring structures, Calculation and specification of the multiple chirality displayed by. **Robert S. Shallenberger, Ronald E. Wrolstad** and **Laurie E. Kerschner.** 599
Sulfur (CM). **Alice C. Johnson.** 468
Sulfur king, Herman Frasch (PROFILES). **Miriam C. Nagel.** 60
Sulfur, stereochemistry and the Reverend William Archibald Spooner. **Derek A. Davenport.** 682
Summer session, Teaching a full year's chemistry course in a six weeks' (VIEW). **Samuel H. Perlmutter.** 562
Superlative problems (TING). **Hugh A. Akers** and **Gwyn E. Akers.** 795
Surface pressure, A mechanical analog of. **Melvin P. Miller.** 197
Survey of undergraduate research over the past decade, A. **James N. Spencer** and **Claude H. Yoder.** 780
Symmetry-based equivalence between the crystal-field and angular-overlap models as applied to some planar, pyramidal and cubic symmetries, The. **P. J. Steenkamp** and **J. W. Gonsalves.** 380
Symposium for students, A. **N. C. Chokotho** and **J. A. Leisten.** 490
Symposium on the contemporary chemical industry and chemical education: A report (IND). **Jay A. Young.** 432
Synthesis design and the computer, Organic. **Bonnie Burns Sandel** and **Robert W. Solomon.** 798
Synthesis of dinitrogen and dihydrogen complexes of molybdenum. **Leonard J. Archer, T. Adrian George** and **Mark E. Noble.** 727
Synthetic chemistry?, How hazardous is (PO). **Terry I. Quickenden.** 503
Synthetic materials in art conservation. **Anthony Werner.** 321

T

TA background on student laboratory achievement, Effect of. **David L. Monts** and **Miles Pickering.** 768
Tangent of a curve, Improved glass rod method for finding the. **Douglas R. Henry.** 518
Task force on the teaching of chemistry: Unique courses, A report of the. **B. R. Siebring.** 481
Teacher training and the pupil-oriented lesson in West Germany. **Clive W. La Pensee.** 569
Teachers' inservice needs: Are they unique?, Chemistry. **Peter A. Rubba.** 430
Teaching Aids
Balloons and the teaching of chemistry. 44
On orbital drawings. 377
Posters and transparencies prepared by computer (CS). 691
Use of ceramic magnets to visualize sequences of peptides, proteins, and nucleic acids. 72
Teaching Techniques
Analogy for rate-determining step. (AA). 645
Analogy for teaching velocity distribution. 645
Analysis of laboratory data using programmable pocket calculator. 436
Another approach to titration curves: Which is the dependent variable? 659
Application of the TRS-80 in the classroom and the laboratory (CS). 239
Balancing complex redox equations by inspection. (CP). 642
Building a periodic table (LA). 634
Calorimetry presentation linked to dieting (CEC). 548
Chemical wastes and the law of conservation of matter (AA). 996
Comprehensive treatment of acid-base equilibria on a pocket calculator (CS). 555
Computer drill in thermodynamics (CS). 554
Computer exercise to teach data plotting. 710
Computer-assisted organic qualitative course (CS). 46
Computer-assisted test construction in chemistry (CS). 177
Detection of carbon monoxide in tobacco smoke using molybdosilicate (TS). 633
Efficiency of orbital overlap: Visual demonstration. 757
Elemental concentration (IDEAS). 426
Entropy analogy (AA). 645
Faculty development, TAs, teaching strategies (Report, sixth biennial conference on chemical education). 14
Fifteen years with a nonacademic chemistry course (VIEW). 711
Growing concrete (AA). 787
Holey crystals! 638
How big is Avogadro's number. 508
Inducing formal thought in introductory chemistry students. 263
Interfacing and data collection with the TRS-80 (CS). 241
KEMGAM: A chemical adventure (CS). 695
Laboratory simulations that include experimental error (CS). 407
Learning problem solving in a thermodynamics course (CS). 51
Mechanical analog of surface pressure. 197
Microcomputer simulation of lab instruments (CS). 410
Microprocessor-simulated mass spectrometer (CS). 411
Moire pattern analogy to electron motion (AA). 480
More on the common ion effect. 1019
Oxidation reduction analogy (AA). 645
Physically handicapped, Teaching chemistry to the. Special, April issue, p. 205—See listings under "Physically Handicapped".
Polymer science introduced by student participation (CEC). 548
Project TEACH supplements. 766
Quick questions (TING). 994
Recycling analytical samples. 742
Rules for coordination number of metal ions (CEC). 681
Scientific method through laboratory experience. 434
Simulation game for decision-making (CS). 410
Simulation methods in kinetics courses (CS). 405
Spectroscopy in organic chemistry at the introductory level. 511
Stereochemical instructional tool. 31
Student perception of problem-solving difficulties. 1036
Student response to simultaneous instruction in SI and conventional units. 366
Symmetry demonstration by puzzles made from Escher's periodic drawings (CB). 772
Symposium for students. 490
Two voyages of the Starship Chemterprise (CEC). 431
Unit analysis problems (TING). 795
Use of a photocopied slide rule to complement limited function calculators. 718
Using microcomputer graphics to teach quantum theory (CS). 553
Weight-loss diets and the law of conservation of energy (AA). 996
Why oatmeal sticks to your ribs (AA). 787
Temperature effect on reaction rates (TD). **Robert Eliason** and **Terence McMahon.** 354
Term symbols, Molecular (CEC). **A. E. Leung, S. P. So** and **Wai-kee Li.** 426
Test construction in chemistry, Computer-assisted (CS). **K. Jeffrey Johnson, W. Van Willis, Oliver Seely, Jr.** and **John W. Moore.** 177
Test for prospective chemistry students, A mathematics readiness. **Rence L. Weisman.** 564
Tested Demonstrations. edited by **George L. Gilbert**
A lecture demonstration model of the quantum mechanical atom. **George Wiger** and **Melvin L. Dutton.** 801

A modified thermit lecture demonstration. **George B. Kauffman.** 802
A permanent demonstration of vapor pressures of solids, liquids and mixtures. **George Deckey** and **Charles Marzzacco.** 725
A simple demonstration of cathodic protection. **James F. Skinner.** 802
Cathodic protection: An overhead projector demonstration. **Charles R. Ward** and **Thomas J. Greenbowe.** 505
Cool-light chemiluminescence. **Bassam Z. Shakhashiri, Lloyd G. Williams, Glen E. Dirreen** and **Ann Francis.** 70
Demonstrating tetrahedral bonding using soap films. **John C. Whitmer.** 280
Dramatic demonstration for a large audience: The formation of hydroxyl ions in the reaction of sodium with water. **Alan T. Hutton.** 506
Entropy as a driving force. **John C. Salzsieder.** 280
Silver Mirror. **Marwin Kemp.** 655
Spectacular gas density demonstration using methane bubbles. **Robert Snipp, Bruce Mattson** and **Winters Hardy.** 354
Temperature effect on reaction rates. **Robert Eliason** and **Terence McMahon.** 354
The ferrioxalate actinometer: A lecture demonstration. **Edward W. Vitz.** 655
Tetrahedral bonding using soap films, Demonstrating (TD). **John C. Whitmer.** 280
Textbook Forum. edited by **George Wiger**
A practical Solvay process experiment. **J. R. McKee** and **J. M. Kauffman.** 1035
Centrifugal force and the Bohr model of the hydrogen atom. **Blanca L. Haendler.** 719
Conjugate and nonconjugate reduction with $LiAlH_4$ and $NaBH_4$. **G. Richard Meyer.** 628
Errors in retrospect. **W. H. Eberhardt.** 359
More on effects controlling carboxylic acidity. **Lowell M. Schwartz.** 778
The crystal field stabilization energy (CFSE). **Swarn Singh Parmer.** 1035
The rotational levels and rotational partition function for $^{16}O_2$, The. **Ian J. McNaught.** 719
Textbooks, Treatment of industrial organic chemistry in current (IND). **Kenneth E. Kolb** and **Doris K. Kolb.** 557
Textile chemistry for the artist. **Sara Butler** and **Sally Malott.** 295
Theoretical Chemistry.
Analytical potential functions for diatomic molecules. 37
Atomic coefficients of in π molecular orbitals of butadience, intuitive approach. 29
Centrifugal force and the Bohr model of the hydrogen atom (TF). 719
Changing conceptions of activation energy. 612
Computation of dissociation energies of diatomic molecules. 609
Driving force of addition and elimination reactions clarified through the Feynman-Hellmann theorem. 615
Exchange stabilization and the variation of ionization energy in the Factorization method and its applications in quantum chemistry. 383
Inferring molecular structure from thermodynamic data. 247
Integral of ξp over harmonic oscillator wavefunctions. 39
Molecular parameters of diatomic molecules: A programmable calculator program. 610
Nuclear quadrupole resonance of R3SbX2 compounds (IE). 519
On orbital drawings. 377
Orbital topology and reaction mechanisms. 753
Plus and minus states of linear molecules. 758
Quantum chemistry via the periodic law. 761
Radial probability density and normalization in hydrogenic atoms. 617
Resonance fluorescence and resonance raman spectroscopy of bromine and iodine vapor. 343
Roothaan's method in one-dimension. 618
Rotational levels and rotational partition function of (TF). 719
Simple Huckel molecular orbital computer program written in BASIC for microcomputer use (CS). 692
Structural information from liquid- and solid-phase ESR: The example of triphenyl-substituted radicals (C6H5)3A of group IVB elements. 389
Structure-resonance theory for pericyclic transition states. 371
Symmetry-based equivalence between the crystal-field and angular-overlap models as applied to some planar, pyramidal and cubic symmetries. 380
Theory and practical use of an hydrogen electrode in aqueous-organic media. **P. Letellier, F. Millot, N. Baffier** and **R. Combes.** 576
Therapeutic utility, The discovery of nitroglycerine: Its preparation and (SBS). **Natalie I. Foster** and **Ned D. Heindel.** 364
Thermal inertia, A versatile oven with very little. **P. Azay, P. M. Marquaire, P. Pommier** and **G. Scacchi.** 441
Thermistor bridge for undergraduate laboratories, A solution calorimeter and. **R. A. Bailey** and **J. W. Zubrick.** 732
Thermit lecture demonstration, A modified (TD). **George B. Kauffman.** 802
Thermodynamic data, Inferring molecular structure from. **A. J. Kassman** and **S. A. Gregory.** 247
Thermodynamics, Computer drill in (CS). **John M. Chamberlin.** 554
Thermodynamics course, Teaching and learning problem solving in science: Part II: Learning problem solving in a (CS). **C. T. C. W. Mettes, A. Pilot, H. J. Roossink** and **H. Kramers-Pals.** 51
Thermodynamics
Continuous variation study of heats of neutralization. 730
Boltzmann distribution and Boltzmann's hypothesis. 603
Gibbs function versus degree of advancement: The Gibbs valley. 21
Inequality of decision on species instability. 26
Temperature and unique energy level populations. 605
Virial treatment of the Joule and Joule-Thomson coefficients. 620
Thomas More College, Origin and development of cooperative education at (CE). **Sr. M. Casimira Mueller.** 707
Thomas More College, The implementation of the cooperative education program by the chemistry department of (CE). **Gerald Franzen.** 708
Thumbnail Sketches. edited by **Mary Virginia Orna,** O.S.U.
Detection of carbon monoxide in tobacco smoke using molybdosilicate. **H. I. Feinstein.** 633
How big is Avogadro's number (or how small are atoms, molecules and ions). **John E. Fulkrod.** 508
Prussian blue, an inorganic evergreen. **Andreas Ludi.** 1013
Some unusual properties of carbon monoxide: A comparison with N_2. **Thomas J. Venanzi.** 423
What compound was discovered as a result of an insurance claim? **Maureen M. Julian.** 793
Time lag method for second-order kinetic rate constants, A statistical note on the. **Lowell M. Schwartz.** 588
Titration, Microcomputer-simulated acid-base (CS). **Paul B. Kelter** and **James D. Carr.** 48
Titration curve calculation, Activity corrections in acid/base and precipitation (CS). **G. M. Muha.** 242
Titration curves: Which is the dependent variable?, Another approach to. **Christopher J. Willis.** 659
Titration for an advanced laboratory, A conductimetric-potentiometric. **Lois C. Rosenthal** and **Lawrence C. Nathan.** 656
Tobacco smoke using molybdosilicate, Detection of carbon monoxide in. **H. I. Feinstein.** 633
Topics course on chemical application of lasers, A. **William F. Coleman.** 652
Topology and reaction mechanisms, Orbital. **Ralph G. Pearson.** 753
Transfer flask for quantitative analysis, A New. **P. L. Gaus** and **Lori A. Pedersen.** 353
Transition states, structure-resonance theory for pericyclic. **William C. Herndon.** 371
Transparencies, Preparation of posters and overhead (CS). **T. D. L. Pearson, M. J. Greer,** and **J. N. Demas.** 691
Trap that eliminates bubbles in the solvent intake of high-pressure liquid chromatography pumps, Aid to chromatographers: A simple. **G. L. Lookhart.** 78
TRS-80, PET, and Apple microcomputers, Interfacing microcomputers: A brief guide for the scientific user of S-100, (CS). **Kenneth L. Ratzlaff.** 470
TRS-80 in the classroom and the laboratory, Application of the (CS). **Edward T. Gray, Jr.** and **Harry J. Workman.** 239
TRS-80, Interfacing and data collection with the (CS). **Edward T. Gray, Jr.** and **Harry J. Workman.** 241
Two years will it all be forgotten?, In (IDEAS). **Ronald DeLorenzo.** 426

U

Undergraduate research over the past decade, A survey of. **James N. Spencer** and **Claude H. Yoder.** 780
Underrepresented groups in science (Report, Sixth Biennial Conference on Chemical Education). 7
Understanding of the atomic orbital concept by Italian high school students, The. **R. Cervellati** and **D. Perugini.** 568
Unique courses, A report of the task force on the teaching of chemistry. **B. R. Siebring.** 481
Universities and high schools, Creating a working relationship between. **Richard Steiner** and **Michael Lesiecki.** 493
Update, An (CURR). **Grace Fischer McGuffie.** 191
UV-visible spectrophotometer, Interfacing and Apple II microcomputer to a (CS). **G. Scott Owne, Deborah Travis** and **Terry Green.** 690

V

Valency states, Metal ions in unusual (Radiation Chemistry-State of the Art). **Robin M. Sellers.** 114
Vapor pressures of solids, liquids and mixtures, A permanent demonstrations of (TD). **George Deckey** and **Charles Marzzacco.** 725

Vibrational spectroscopy of CS2: A physical chemistry experiment. **Richard Mendelsohn** and **Ernst U. Monse.** 582
View From My Classroom. edited by **Duane Sell**
Arousing student interest through thirty-five years of changes in chemistry (VIEW). **Keith Hunnings** and **Lyndall Hunnings.** 63
Fifteen years with a nonacademic chemistry course. **C. LeRoy Darlington.** 711
Increasing interest and motivation through practical applications of chemistry. **Jack Foote.** 198
Individualized instruction in chemistry is possible. **Shirley E. Richardson.** 1007
Teaching a full year's chemistry course in a six weeks' summer session. **Samuel H. Perlmutter.** 562
The open laboratory-an alternative. **David W. Crane.** 794
Vinyl acetate content of packaging film: A quantitative infrared experiment, The. **K. N. Allpress, B. J. Cowell** and **A. C. Herd.** 741
Virial treatment of the Joule and Joule-Thomson coefficients, A. **Thomas R. Rybolt.** 620
Viscous liquids: Simplified derivations of the Stokes and Einstein equation, Motion in. **Max A. Lauffer.** 250
Visually handicapped chemistry students, High technology laboratory aids for. **David Lunney** and **Robert C. Morrison.** 228
Visually handicapped students in introductory chemistry courses, Teaching aids for. **Deborah Smith.** 226
Visually handicapped, Chemistry and the. **G. A. Crosby.** 206
Visually impaired: Available teaching aids, Chemistry and the. **Dorothy Tombaugh.** 222
Vitamin-mineral tablets, Determination of iron by atomic absorption in. **Robert P. Pinnell** and **Andrew W. Zanella.** 444
Volume ratio dilution, Notation confusion in. **Patrick L. Beaulieu** and **Terry S. Woodin.** 740

W

Warder and the kinetics of saponification, R. B. (SBS). **D. S. Tarbell** and **A. T. Tarbell.** 559
Waste disposal, Chemical (ST). **Miriam C. Nagel.** 825
Wastes and the law of conservation of matter, Chemical (AA). **John W. Hill.** 996
Water, water everywhere, nor any drop to drink (TING). **Rod O'Connor.** 726
Water-what's really peculiar? (LTE). **Harry H. Sisler.** 448
Wavefunctions, Integral of $\xi\nu$ over harmonic oscillator. **Bhairav D. Joshi, Stephen E. LaGrou** and **Douglas W. Spooner.** 39
Weight-loss diets and the law of conservation of energy (AA). **John W. Hill.** 996
What is expected from high school chemistry by selected college chemistry instructors (CURR). **John Zimelis.** 488
What is the rate-limiting step of a multistep reaction? **Joseph R. Murdoch.** 32
What's Happening in Your Part of the Country?
Northcentral. edited by **Robert Suits.** 288, 447, 524, 834
Northeast. edited by **Jim Ealy.** 202, 287, 445, 523, 596, 667, 776
Northwest. edited by **Doug Mandt.** 287, 447, 524, 667, 834
Southcentral. edited by **Jan Harris.** 524, 667, 746, 834
Southeast. edited by **Nancy LeMaster.** 202, 287, 447, 524, 596, 667, 746, 834
Southwest. edited by **Eric Streitberger.** 202, 288, 596
White ammonia fountain, A. **Charles R. Cates** and **John T. Moore.** 498
Wire gauzes, Evaluation of asbestos fiber hazard from (SAFETY). **Billy J. Yager.** A134
Wood and other biomass: Chemicals from (CHEM I). **David W. Goheen.**
Part I: Future supply of organic chemicals. 465
Part II: The chemistry of conversion. 544
Workshop at the interface of high school and college chemistry, 1st annual. **Harriet Taylor** and **Mickey Sarquis.** 266
World systems: Art and science, A dialogue concerning the two chief (CB). **Henry A. Bent.** 331

XYZ

X-ray crystallography—two computer programs, An introduction to (CS). **M. Webster.** 555
X-rays, An early report on the physiological effects of (SBS). **D. S. Tarbell, A. T. Tarbell** and **J. H. Hamilton.** 275
2YC₃ Joules. The role of chemistry in firefighting. **Emanuel G. Terezakis.** 698
Zinc pyrrolidinecarbodithioate: An atomic absorption experiment for instrumental analysis, Determination of the extraction constant for. **L. Claron Hoskins, Paul B. Reichardt,** and **Richard J. Stolzberg.** 580
ZnS, Luminescent processes elucidated by simple experiments on. **R. Schwankner, M. Eiswirth** and **H. Venghaus.** 805

Book Reviews

Authors

Addision, Ault. Techniques and experiments for organic chemistry. A152

American Society for Testing & Materials. Manual on practices in molecular spectroscopy. A226

Andersen, L. Bryce—*See* **Foust, Alan S.**

Arent, J.—*See* **Brescia, F.**

Aylett, B. J. Organometallic compounds, Vol. 1, Part 2. A29

Bailey, R. A., Clarke, H. M., Ferris, J. P., Krause, S., and **Strong, R. L.** Chemistry of the environment. A116

Baltrop, John A., and **Coyle, John D.** Principles of photochemistry. A205

Banks, James E. Naming organic compounds: A programmed introduction to organic chemistry. Second edition. A274

Banks, R. E., *editor.* Organofluorine chemicals and their industrial applications. A29

Barnes, John E., and **Waring, Alan J.** Pocket programmable calculators. A229

Batzer, H., and **Lohse, F.** Introduction to macromolecular chemistry, seond edition. A314

Becker, Edwin D. High resolution NMR theory and chemical applications, second edition. A226

Berry, R. S., Rice S. A., and **Ross, J.** Physical chemistry, A312

Bezkorovainy, A.—*See* **Rafelson, Jr., M. E.**

Bockris, John O'M.—*See* **McGown, Lina Baine.**

Boreskov, G. K., and **Minachev, Kh. M.,** *editors.* Application of zeolites in catalysis. A206

Boschmann, Irwin—*See* **Welcher, Frank J.**

Boud, D. J., Dunn, J. G., Kennedy, T., and **Walker, M. G.** Laboratory teaching in tertiary science (a review of some recent developments). A68

Bowden, John A., and **Rix, Colin J.** Mass and volume measurement: Basic laboratory skills, second edition. A155

Brescia, F., Arent, J., Meislich, H., and **Turk, A.** Fundamentals of chemistry, fourth edition. A273

Brown, Glenn H., and **Wolken, Jerome J.** Liquid crystals and biological structures. A116

Budevsky, O. Foundations of chemical analysis. A113

Carrington, A., and **McLachian, A. D.** Introdution to magnetic resonance. A114

Chapman, J. M.—*See* **Edelman, J.**

Charney, Eliot. The molecular basis of optical activity. A29

Chemical Society Assessment Group. Research in assessment II. A247

Clarke, H. M.—*See* Bailey, R. A.

Clump, Curtis W.—*See* Bailey, R. A.

Clump, Curtis W.—*See* **Foust, Alan S.**

Conway, Pierce—*See* **Smith, R. Nelson.**

Cornish-Bowden, Athel. Fundamentals of enzyme kinetics. A114

Cotton, F. Albert, and **wilkinson, Geoffrey.** Advanced inorganic chemistry: A comprehensive text, fourth edition, A204

Covington, Arthur K., *editor.* Ion selective electrode methodology, Vols. I & II. A30

Coyle, John D.—*See* **Baltrop, John A.**

Crothers, Donald M.—*See* **Eisenberg, David S.**

Day, William. Genesis on planet earth. The search for life's beginning. A316

Dever David F.—*See* **Grunwald, E.**

Dinell, Robert. Association theory: The phases of matter and their transformations. A378

Dover, S. D.—*See* **Richards, E. G.**

Downs, Gary E.—*See* **Gerlovich, Jack A.**

Dunn, J. G.—*See* **Boud, D. J.**

Durst, M. Dupont, and **Gokel, G. W.** Experimental organic chemistry. A310

Dutch Association of Safety Experts. Handling chemicals safely. A227

Dymond, J. H., and Smith, E. B. The virial coefficients of pure gases and mixtures. A critical compilation. A246

Eckschlager, K., and Stepanek, V. Information theory as applied to chemical analysis. A276

Edelman J., and **Chapman, J. M.** Basic biochemistry, A visual approach for college and university students. A151

Eisenberg, David S., and **Crothers, Donald M.** Physical chemistry with applications to the life sciences. A152

Epstein, L. M.—*See* **Johnson K. J..**

Ewing, G. W.—*See* **Vassos.**

Ferris J. P.—*See* **Bailey, R. A.**

Filov, V. A., Golubev, A. A., Liublina, E. I., and **Tolokontsev, N. A.** Quantitative toxicology. A246

Flurry, Jr., R. L. Symmetry groups theory and chemical applications. A380

Foust, Alan S., Wenzel, Leonard A., Clump, Curtis W., Maus, Louis, and **Andersen, L. Bryce.** Principles of unit operations, second edition. A154

Fraenkel, Gideon—*See* **Kaplan, Jerome I.**

Fuchsman, C. H. Peat industrial chemistry and technology. A315

Gailey, K. D.—*See* **Whitten, K. W.**

Gerlovich, Jack A., and **Downs, Gary E.** Better science through safety. A381

Gettins, W. J., and **Wyn-Jones, E.,** *editors.* Techniques and applications of fast reactions in solution. A30

Gilbert, John C.—*See* **Roberts, Royston M.**

Gokel, G. W.—*See* **Durst, M. Dupont.**

Goldish, Dorothy M. Basic mathematics for beginning chemistry. A65

Golubev, A. A.—*See* **Filov, V. A.**

Goodger, E. M. Alternative fuels, chemical energy resources. A382

Grahm, Robert W., *editor.* Rechargeable batteries. A181

Grunwald, E., Dever, David F., and **Keehn, Philip M.** Megawatt infrared laser chemistry. A345

Gunther, H. NMR spectroscopy. A315

Hanack, Michael—*See* **Stang, Peter.**

Hayashi, J. A.—*See* **Rafelon, Jr., M.E.**

Hiebert, Erwin N., Ihde, A. J., and **Schofield,** R. E. Joseph Priestley: Scientist, theologian, and metaphysician. A155

Hurst, Derek T. An introduction to the chemistry and biochemistry of pyrimidines, purines, and pteridines. A377

Ihde, A. J.—*See* **Hiebert, Erwin N.**

Isenberg, Cyril, *editor.* The science of soap films and soal bubbles. A179

Jenkins, D.—*See* **Snoeyink, V. L.**

Jennings, Walter., and **Shibamoto, Takayuki.** Qualitative analysis; of flavor and fragrance volatiles by glass capillary gas chromatography. A381

Johnson, J. C. Immobilized enzymes: preparation and engineering, recent advances. A72

Johnson, K. J., and **Epstein, L. M.** General chemistry examination problems, fourth edition. A203

Jones, Richard A. Y. Physical and mechanistic organic chemistry. A66

Kaplan Jerome, I., and **Fraenkel, Gideon.** NMR of chemical exchanging systems. A226

Keehn, Philip M.—*See* Grunwald, E.

Kennedy, T.—*See* Boud, D. J.

Klei, Herbert E.—*See* **Sundstrom, Donald W.**

Kotz, John C.—*See* Purcell, Keith F.

Krause, S.—*See* **Bailey, R. A.**

Kryt, D., *editor.* The dictionary of chemical terminology. A273

L'Annunziata, Michael R. Radotracers in agricultural chemistry. A153

Landsberg, et al., Hans, *editors.* Energy: The next twenty years. A178

Lappert, M. F., Power, P. P., Sanger, A. R., and **Srivastava, R. C.** Metal and metalloid amides. A315

Levy, George C., *editor.* Topics in carbon-13 NMR spectroscopy. A30

Liubline, E. I.—*See* **Filov, V. A.**

Lovesey, Stephen. Condensed matter physics: Dynamic correlations. A276

Lowell, S. Introduction to powder surface area. A345

Marmion, Daniel M. Handbook of U. S. colornats for foods, drugs, and cosmetics. A116

Marrow, Paul E.—*See* **Toribara, Taft Y.**

Maus, Louis—*See* **Foust, Alan S.**

McGlashan, M. L. Chemical thermodynamics. A177

McGown, Linda Baine, and **Bockris, John O'M.** How to obtain abundant clean energy. A228

McLachlan, A. D.—*See* **Carrington, A.**

McWeeny, Roy. Coulson's valence. A206

Meislich, H.—*See* **Brescia, F.**

Melander, Lars, and **Saunders, William H.** Reaction rates of isotopic molecules. A247

Miller, Bernard. Organic chemistry. The basis of life. A225

Miller, Morton W.—*See* **Toribara, Taft Y.**

Mittal, K. L., *editor.* Surface contamination: Genesis, detection, and control. A32

Mittal, K. L., *editor.* Solution chemistry of surfactants, Vols. 1 & 2. A30

Moeller, Therals. Chemistry with inorganic qualitative analysis. A113

Murray, Peter R. S., *editor.* Principles of organic chemistry, second edition. A177

Nakamura, Akira, and **Tsutsui, Minoru.** Principles and applications of homogenous catalysis. A225

Newell, Sydney B. Chemsitry: An introduction. A203

Newton, David E., and **Valch, J. Weston.** Exercises in organic and biochemistry. A151

Olabisi, O., Robeson, L. M., and **Shaw, M. T. Polymer-polymer miscibility. A154**

Pauncz, R. Spin elgenfunctions construction and use. A381

Potapov, V. M. Sterochemistry. A246

Power, P. P.—*See* **Lappert, M. F.**

Purcell, Keith F., and Kotz, John C. An introduction to inorganic chemistry. A204

Rafelson, Jr., M. E., Hayashi, J. A., and **Bezkorovainy, A.** Basic biochemistry, fourth edition. A273

Ranganathan, Darshan, and **Ranganathan, Subramania.** Challenging problems in organic reaction mechanisms. A114

Ranganathan, Subramania—*See* **Ranganathan, Darshan.**

Ranney, W. Synthetic oils and additives for lubricants (advances since 1977). A382

Rappoport, Zvi—*See* **Stang, Peter.**

Rice, S. A.—*See* **Berry, R. S.**

Richards, E. G., and **Dover, S. D.** An introduction to physical properties of large molecules in solution. A377

Rix, Colin J.—*See* **Bowden, John A.**

Roberts, Royston M., Gilbert, John C., Rodewald, Lynn B., and **Wingrove, Alan S.** Modern experimental organic chemistry. A66
Robeson, L. M.—**See Olabisi, O.**
Rodewald, John C.—*See* **Roberts, Royston M.**
Ross, J.—*See* **Berry, R. S.**
Saeva, Franklin D., *editor.* Liquid crystals: The fourth state of matter. A118
Sanger, A. R.—*See* **Lappert, M. F.**
Saunders, William H.—*See* **Melander, Lars.**
Schilt, Alfred A., and **Smith, G. Frederick.** Perchloric acid and perchlorates. A118
Schofield, R. E.—*See* **Hiebert, Erwin N.**
Shaw, M. T.—*See* **Olabisi, O.**
Sherman, Alan, and **Sherman, Sharon J.** The elements of life: An approach to chemistry for the helath sciences. A245
Sherman, Sharon J.—*See* **Sherman, Alan.**
Shibamoto, Takayuki—*See* **Jennings, Walter.**
Skoog, D. A., and **West, D. M.** Principles of instrumental analysis, second edition. A314
Smith, B. V., and **Waldron, N. M.** Elementary practical organic chemistry I: Preparations, third edition. A204
Smith, E. B.—*See* **Dymond, J. H.**
Smith, G. Frederick—*See* **Schilt, Alred A.**
Smith, R. Nelson., and **Pierce, Conway.** Solving general chemistry problems. A245
Snoeyink, V. L., and **Jenkins, D.** Water chemistry. A382
Spiro, Thomas G., *editor.* Nucleic acid-metal ion interactions, Volume I of Metal ions in biology. A153
Srivastava, R. C.—*See* **Lapper, M. F.**
Stang, Peter J., Rappoport, Zvi, Hanack, Michael, and **Subramanian, R.** Vinyl cations. A179
Stepanek, V.—*See* **Eckschlager, K.**
Stowell, John C. Carbanions in organic synthesis. A68
Strong, R. L.—*See* **Bailey, R. A.**
Subramanian, R.—*See* **Stang, Peter.**
Sundstrom, Donald W., and **Klei, Herbert E.** Wastewater treatment. A33
Sykes, Peter. Reaction pathways of carboxylic acid derivatives. A120
Tadokoro, H. Structure of crystalline polymers. A378
Tanford, Charles. The hydrophobic effect: Formation of micelles and biological membranes, second sedition. A246
Tolokontsev, N. A.—*See* **Filov, V. A.**
Toribara, Taft Y., Miller Morton W., and **Marrow, Paul E.,** *editors.* Polluted rain. A228
Traynham, James G. Organic nomenclature: A programmed introduction, second edition. A274
Tsutsui, Minoru—*See* **Nakamura, Akira.**
Turk, A.—*See* **Brescia, F.**
Turro, N. J. Urea-formaldehyde resins. A380
Valch, J. Weston—*See* **Newton, David E.**
Van Loon, J. C. Analytical atomic absorption spectroscopy. A278
Vassos and **Ewing.** Analog and digital electronics for scientists. A297
Waddams, A. Lawrence. Chemicals from petroleum—an introductory survey, fourth edition. A206
Waldron, N. M.—*See* **Smith, B. V.**
Walker, M. G.—*See* **Boud, D. J.**
Waring, Alan J.—*See* **Barnes, John E.**
Warren K. Chemical foundations: The alkali industry in Britain to 1926. A274
Welcher, Frank J., and **Boschmann, Irwin.** Organic reagents for copper. A68
Wenzel, Leonard A.—*See* **Foust, Alan S.**
West, D. M.—*See* **Skoog, D. A.**
Whitten, K. W., Gailey, K. D. General chemistry with qualitative analysis. A307
Wilkinson, Geoffrey—*See* **Cotton, F. Albert.**
Wingrove, Alan S.—*See* **Roberts, Royston M.**
Wiseman, Alan, *editor.* Topics in enzyme and fermentation biotechnology 3. A178
Wolke, Robert L. Chemistry explained. A65
Wyn-Jones, E.—*See* **Gettins, W. J.**

Titles

Advanced inorganic chemistry: A comprehensive text, fourth edition. **F. Albert Cotton** and **Geoffrey Wilkinson.** A204
Agricultural chemistry, Radiotracers in. **Michael R. L'Annunziata.** A153
Alkali industry in Britain to 1926, Chemical foundations: The. **K. Warren.** A274
Alternative fuels, chemical energy resources. **M. Goodger.** A382
Analog and digital electronics for scientists. **Vassos and Ewing.** A207
Analysis, Chemistry with inorganic qualitative. **Therald Moeller.** A113
Analysis, Foundations of chemical. **O. Budevsky.** A113
Anaiysis, Information theory as applied to chemical. **K. Eckschlager** and **V. Stepanek.** A276
Analytical atomic absorption spectroscopy. **J. C. Van Loon.** A278
Application of zeolites in catalysis. **G. K. Boreskov** and **Kh. M. Minachev.,** *editors.* A206
Association theory: The phases of matter and their transformations. **Robert Dinell.** A378
Atomic absorption spectroscopy, Analytical. **J. C. Van Loon.** A278
Basic biochemistry, A visual approach for college and university students. **J. Edleman** and **J. M. Chapman.** A151
Basic biochemistry, fourth edition. **M. E. Rafelson, Jr.,, J. A. Hayashi** and **A. Bezkorovainy.** A273
Basic mathemtaics for beginning chemistry. **Dorothy M. Goldish.** A65
Batteries, Rechargeable. **Robert W. Graham,** *editor.* A181
Better science through safety. **Jack A. Gerlovich** and **Gary E. Downs.** A381
Biochemistry, A visual approach for college and university students, Basic. **J. Edleman** and **J. M. Chapman.** A151
Biochemistry, Exercises in organic and. **David E. Newton** and **Weston Valch.** A151
Biochemistry, fourth edition. Basic. **M. E. Rafelson, Jr., J. A. Hayashi** and **A. Bezkorovainy.** A273
Biochemistry of pyrimidines, purines, and pteridines, An introduction to the chemistry and. **Derek T. Hurst.** A377
Biological membranes, second edition, The hydrophobic effect: Formation of micelles and. **Charles Tanford.** A246
Biological stuctures, Liquid crystals and. **Glenn H. Brown** and **Jerome J. Wolken.** A116
Biology, Metal ions in: Volume I, Nucleic acid-metal ion interactions. **Thomas G. Spiro,** *editor.* A153
Biotechnology 3, Topics in enzyme and fermentation. **Alan Wiseman,** *editor.* A178
Britain to 1926, Chemical foundations: The alkali industry in. **K. Warren.** A274
Calculators, Pocket programmable. **John E. Barnes** and **Alan J. Waring.** A229
Carbanions in organic synthesis. **John C. Stowell.** A68
Carbon-13 NMR spectroscopy, Topics in. **George C. Levy,** *editor.* A30
Carboxylic acid derivative, Reation pathways of. **Peter Sykes.** A120
Catalysis, Application of zeolites in. **G. K. Boreskov** and **Kh. M. Minachev,** *editors.* A206
Catalysis, Principles and applications of homogeneous. **Akira Nakamura** and **Minoru Tsutsui.** A225
Cations, Vinyl. **Peter J. Stang, Zvi Rappoport, Michael Hanack** and **L. R. Subramanian.** A179
Challenging problems in organic reaction mechanisms. **Darshan Ranganathan** and **Subramania Ranganathan.** A114
Chemical exchanging systems, NMR of. **Jerome I. Kaplan** and **Gideon Fraenkel.** A226
Chemical foundations: The alkali industry in Britain to 1926. **K. Warren.** A274
Chemical thermodynamics. **M. L. McGlashan.** A177
Chemicals from petroleum—an introductory survey, fourth edition. **A. Lawrence Waddams.** A206
Chemistry explained. **Robert L. Wolke.** A64
Chemistry of the environment. **R. A. Bailey, H. M. Clarke, J. P. Ferris, S. Krause** and **R. L. Strong.** A116
Chemistry with inorganic qualitative analysis. **Therald Moeller.** A113
Chemistry: An introduction. **Sydney B. Newell.** A203
Chromatography, Qualitative analyis of flavor and fragrance volatiles by glass capillary gas. **Walter Jennings** and **Takayuki Shibamoto.** A381
Colorants for foods, drugs, and cosmetics, Handbook of U.S. **Daniel M. Marmion.** A116
Condensed matter physcis: Dynamic correlations. **Stephen Lovesey.** A276
Contamination: Genesis, detection, and control, Surface. **K. L. Mittal,** *editor.* A32
Copper, Organic reagents for. **Frank J. Welcher** and **Irwin Boschmann.** A68
Cosmetics, handbook of U.S. colorants for foods, drugs and. **Daniel M. Marmion.** A116
Coulson's valence. **Roy McWeeny.** A206
Crystalline polymers, Structure of. **H. Tadokoro.** A378
Dictionary of chemical terminology. **D. Kry,** *editor.* A273
Digital elecronics for scientists, Analog and. **Vassos** and **Ewing.** A207
Drugs, and cosmetics, Handbook of U.S. colorants for foods. **Daniel M. Marmion.** A116
Electrode methodology, Ion-selective, Vols. I & II. **Arthur K. Covington,** *editor.* A30
Electronics for scientists, Analog and digital. **Vassos** and **Ewing.** A207
Elementary practical organic chemistry 1: Preparation, third edition. Revised by **B. V. Smith** and **N. M. Waldron,** A204
Elements of life: An approach to chemistry for the health sciences. **Alan Sherman** and **Sharon J. Sherman.** A245
Elgenfunctions construction and use, Spin. **R. Pauncz.** A381
Enayme nomenclature. **Nomenclature Committee of the International Union of Biochemistry.** A70
Energy, How to obtain abundant clean. **Linda Baine McGown** and **John O'M. Bockris.** A228
Energy resources, Alternative fuels, chemical. **E. M. Goodger.** A382
Energy: The next twenty years. **Hans H. Landsberg, et al.,** *editors.* A178
Environment, Chemistry of the. **R. A. Bailey, H. M. Clarke, J. P. Ferris, S. Krause** and **R. L. Stron.** A116
Environmental science, second edition, McGraw-Hill encyclopedia of. A228
Enzyme and fermentation biotechnology 3, Topics in. **Alan Wiseman,** *editor.* A178
Enzyme kinetics, Fundamentals of. **Athel Cornish-Bowden.** A114
Enzymes: Preparation and engineering, recent advances, Immobilized. **J. C. Johnson.** A72
Examination problems, fourth edition, General. **K. J. Johnson** and **L. M. Epstein.** A203
Exercises in organic and biochemistry. **David E. Newton** and **J. Weston Valch.** A151
Experimental organic chemistry, Modern. **Royston M. Roberts, John C. Gilbert, Lynn B. Rodewald** and **Alan S. Wingrove.** A66
Experimental organic chemistry. **M. Dupont Durst** and **G. W. Gokel.** A310
Fast reactions in solution, Techniques and applications of. **W. J. Gettins,** and **E. Wyn-Jones,** *editors.* A30

Fermentation biotechnology 3, Topics in enzyme and. **Alan Wiseman,** *editor.* A178
Flavor and fragrance volatiles by glass capillary gas chromatography, Qualitative analysis of. **Walter Jennings** and **Takayuki Shibamoto.** A381
Foods, drugs, and cosmetic, Handbook of U.S. colorants for. **Daniel M. Marmion.** A116
Foundations of chemical analysis. **O. Budevsky.** A113
Frangrance volatiles by glass capillary gas chromatography, Qualitative analysis of flavor and. **Walter Jennings** and **Takayuki Shibamoto.** A381
Fuels, chemical energy resources, Alternative. **E. M. Goodger.** A382
Fundamentals of chemistry, fourth edition. **F. Brescia, J. Arent, H. Meislich** and **A. Turk.** A273
Fundamentals of enzyme kinetcs. **Athel Cornish-Bowden.** A114
Gas chromatography, Qualitative analysis of flavor and fragrance volatiles by glass capillary. **Walter Jennings** and **Takayuki Shibamoto.** A381
Gases and mixtures. A critical compilation, The virial coefficients of pure. **J. H. Dymond** and **E. B. Smith.** A246
General chemistry examination problems, fourth edition. **K. J. Johnson** and **L. M. Epstein.** A203
General chemistry problems, Solving. **R. Nelson Smith** and **Conway Pierce.** A245
General chemistry with qualitative analysis. **K. W. Whitten** and **K. D. Gailey.** A307
Genesis on planet earth the search for life's beginning. **William Day.** A316
Handbook of U.S. colorants for foods, drugs, and cosmetics. **Daniel M. Marmion.** A116
Handling chemicals safely. Dutch Association of Safety Experts. A227
Health sciences, The elements of life: An approach to chemistry for the. **Alan Sherman** and **Sharon J. Sherman.** 245
High resolution NMR theory and chemical applications, second edition. **Edwin D. Becker.** A226
Homogeneous catalysis, Principles and applications of. **Akira Nakamura** and **Minoru Tsutsui.** A225
How to obtain abundant clean energy. **Linda Baine McGown** and **John O'M. Bockris.** A228
Hydrophobic effect: Formation of micelles and biological membranes, second edition, The. **Charles Tanford.** A246
Immobilized enzymes: Preparation and engineering, recent advances. **J. C. Johnson.** A72
Industrial applications, Organofluorine chemicals and their. **R. E. Banks,** *editor.* A29
Information theory as applied to chemical analysis. **K. Eckschlager** and **V. Stepanek.** A276
Infrared laser chemistry, Megawatt. **E. Grunwald, David F. Dever,** and **Philip M. Keehn.** A345
Inorganic chemistry, An introduction to. **Keith F. Purcell.** A204
Inorganic chemistry: A comprehensive text, fourth edition, Advanced. F. Albert Cotton and **Geoffrey Wilkinson.** A204
Inorganic qualitative analysis, Chemistry with. **Therald Moeller.** A113
Instrumental analysis, second edition, Principles of. **D. A. Skoog** and **D. M. West.** A314
Introduction to macromolecular chemistry, second edition. **H. Batzer** and **F. Lohse.** A314
Introduction to magnetic resonance. **A. Carrington** and **A. D. McLachlan.** A114
Introduction to physical properties of large molecules in solution, An. **E. G. Richards** and **S. D. Dover.** A377
Introduction to powder surface area. **S. Lowell.** A345
Introduction to the chemistry and biochemistry of pyrimidines, purines, and pteridines, An. **Derek T. Hurst.** A377
Ion-selective electrode methodology, Vols. I & II. **Arthur K. Covington,** *editor.* A30
Isotopic molecules, Reaction rates of. **Lars Melander** and **William H. Saunders.** A247
Joseph Priestley: Scientist, theologian, and metaphysician. **Erwin N. Hiebert, A. J. Ihde** and **R. E. Schofield.** A155
Kinetics, Fundamentals of enzyme. **Athel Cornish-Bowden.** A114
Laboratory skills, 2nd edition, Mass and volume measurement:, Basic. **John A. Bowden** and **Colin J. Rix.** A155
Laboratory teaching in tertiary science (a review of some recent developments). **D. J. Boud.** A68
Large molecules in solution, An introduction to physical properties of. **E. G. Richards** and **S. D. Dover.** A377
Laser chemistry, Megawatt infrared. **E. Grunwald, David F. Dever** and **Philip M. Keehn.** A345
Life sciences, Physical chemistry with applications to the. **David S. Eisenberg** and **Donald M. Crothers.** A152
Life's beginning, Genesis on planet earth the search for. **William Day,** A316
Liquid crystals and biological structures. **Glenn H. Brown** and **Jerome J. Wolken.** A116
Liquid crystals: The fourth state of matter. **Franklin D. Saaeva,** *editor.* A118
Macromolecular chemistry, second edition, Introduction to. **H. Batzer** and **F. Lohse.** A314
Magnetic resonance, Introduction to. **A. Carrington** and **A. D. McLachlan.** A114
Manual on practices in molecular spectroscopy. American Society for Testing and Materials. A226
Mass and volume measurement: Basic laboratory skills, 2nd edition. **John A. Bowden** and **Colin J. Rix.** A155
Mathematics for beginning chemistry, Basic. **Dorothy M. Goldish.** A65
McGraw-Hill encyclopedia of environmental science, second edition. A228
Mechanisms, Challenging problems in organic reaction. **Darshan Ranganathan** and **Subramania Ranganathan.** A114
Mechansistic organic chemistry, Physical and. **Richard A. Y. Jones.** A66
Megawatt infrared laser chemistry. **E. Grunwald, David F. Dever,** and **Philip M. Keehn.** A345
Metal and metalloid amides. **M. F. Lappert, P. P. Power, A. R. Sanger** and **R. C. Srivasatava.** A315
Micelles and biololgical membranes, second edition, The hydrophobic effect: Formation of. **Charles Tanford.** A246
Modern experimental organic chemistry. **Royston M. Roberts, John C. Gilbert, Lynn B. Rodewald** and **Alan S. Wingrove.** A66
Modern molecular photochemistry. **Nicholas J. Turro.** A312
Molecular basis of optical activity, The. **Eliot Charney.** A29
Molecular spectroscopy, Manual on practices in. **American Society for Testing and Materials.** A226
Naming organic, compounds: A programmed introduction to organic chemistry, second edition. **James E. Banks.** A274
NMR of chemical exchanging systems. **Jerome I. Kaplan** and **Gideon Fraenkel.** A226
NMR spectroscopy. **H. Gunther.** A315
NMR spectroscopy, Topics in carbon-13. **George C. Levy,** *editor.* A30
NMR theory and chemical applications, second edition, High resolution. **Edwin D. Becker.** A226
Nomenclature, Enzyme. **Nomenclature Committee of the International Union of Biochemistry.** A70
Nomenclature: A programmed introduction, Organic, second edition. Workbook supplement. **James G. Traynham.** A274
Nomenclature: A programmed introduction, Organic, second edition. **James G. Traynham.** A274
Nucleic acid-metal ion interactions volume I, Metal ions in biology. **Thomas G. Spiro.,** *editor.* A153
Optical activity, The molecular basis of. **Eliot Charney.** A29
Organic and biochemistry, Exercises in. **David E. Newton** and **J. Weston Valch.** A151
Organic chemistry 1: Preparation, third edition, Elementary practical. Revised by **B. V. Smith** and **N. M. Waldron.** A204
Organic chemistry, Experimental. **M. Dupont Durst** and **G. W. Gokel.** A310
Organic chemistry, Modern experimental. **Royston M. Roberts, John C. Gilbert, Lynn B. Rodewald** and **Alan S. Wingrove.** A66
Organic chemistry, Physical and mechanistic. **Richard A. Y. Jones.** A66
Organic chemistry, Techniques and experiments for. **Addison Ault.** A152
Organic chemistry, Principles of, second edition. **Peter R. S. Murray.,** *editor.* A177
Organic chemistry. The basis of life. **Bernard Miller.** A225
Organic compounds: A programmed introduction to organic chemistry, Naming, second edition. **James E. Banks.** A274
Organic nomenclature: A programmed introduction. second edition. **James G. Traynham.** A274
Organic nomenclature: A programmed introduction, second edition. Workbook Supplement. **James G. Traynham.** A274
Organic reaction mechanisms, Challenging problems in. **Darshan Ranganathan and Subramania Ranganathan.** A114
Organic reagents for copper. **Frank J. Welcher** and **Irwin Boschmann.** A68
Organic synthesis, Carbanions in. **John C. Stowell.** A68
Organofluorine chemicals and their industrial applications. **R. E. Banks.,** *editor.* A29
Organometallic compounds, Vol. I, Part II. **B. J. Aylett.** A29
Peat industrial chemistry and technology. **C. H. Fuchsman.** A315
Perchloric acid and perchlorates. **Alfred A. Schilt.** A118
Petroleum—an introductory survey, fourth edition, Chemicals from. **A. Lawrence Waddams.** A206
Phases of matter and their transformations, Association theory: The. **Robert Dinell.** A378
Photochemistry, Modern molecular. **Nicholas J. Turro.** A312
Photochemistry, Principles of. **John A. Baltrop** and **John D. Coyle.** A205
Physical and mechanistic organic chemistry. **Richard A. Y. Jones.** A66
Physical chemistry. **R. S. Berry, A. A. Rice** and **J. Ross.** A312
Physical chemistry with applications to the life sciences. **David S. Eisenberg** and **Donald M. Crothers.** A152
Physical properties of large molecules in solution, An introduction to. **E. G. Richards** and **S. D. Dover.** A377
Physics: Dynamic correlations, Condensed matter. **Stephen Lovesay.** A276
Pocket programmable calculators. **John E. Barnes** and **Alan J. Waring.** A229
Polluted rain. **Taft Y. Toribara, Morton W. Miller** and **Paul E. Marrow,** *editors.* A228
Polymer-polymer miscibility. **O. Olabisi, L. M. Robeson** and **M. T. Shaw.** A154
Powder surface area, Introduction to. **S. Lowell.** A345
Preparations, third edition, Elementary practical organic chemistry. *Revised by* **B. V. Smith** and **N. M. Waldron.** A204
Priestley: Scientist, theologian, and metaphysician, Joseph. **Erwin N. Hiebert,**

A. J. Ihde and **R. E. Schofield.** A155
Principles and applications of homogeneous catalysis. **Akira Nakamura** and **Minoru Tsutsui.** A225
Principles of instrumental analysis, second edition. **D. A. Skoog** and **D. M. West.** A314
Principles of organic chemistry, second edition. **Peter R. S. Murray,** *editor.* A177
Principles of photochemistry. **John A. Baltrop** and **John D. Coyle.** A205
Principles of unit operations, second edition. **Alan S. Foust, Leonard A. Wenzel, Curtis W. Clump, Louis Maus,** and **L. Bryce Andersen.** A154
Programmed introduction to organic chemistry, A: Naming organic compounds, second edition. **James E. Banks.** A274
Programmed introduction, A: Organic nomenclature: Workbook Supplement, second edition. **A. James G. Traynham.** A274
Programmed introduction: Organic nomenclature, second edition. **A. James G. Traynham.** A274
Pyrimidines, purines, and pteridines, An introduction to the chemistry and biochemistry of. **Derek T. Hurst.** A377
Qualitative analysis, Chemistry with inorganic. **Therald Moeller.** A113
Qualitative analysis, General chemistry with. **K. W. Whitten** and **K. D. Gailey.** A307
Qualitative analysis of flavor and fragrance volatiles by glass capillary gas chromatography. **Walter Jennings** and **Takayuki Shibamoto.** A381
Quantitative toxicology. **V. A. Filov, A. A. Golubev, E. I. Liublina** and **N. A. Tolokontsev.** A246
Quantum chemistry—a scientific melting pot. **Per-Olov Lowdin, Jean-Louis Calais** and **Osvaldo Goscinski,** *editors.* A152
Radiotracers in agricultural chemistry. **Michael R. L'Annunziata.** A153
Rain, Polluted. **Taft Y. Toribara, Morton W. Miller** and **Paul E. Marrow,** *editors.* A228
Reaction pathways of carboxylic acid derivatives. **Peter Sykes.** A120
Reaction rates of isotopic molecules. **Lars Melander** and **William H. Saunders.** A247
Rechargeable batteries. **Robert W. Graham,** *editor.* A181
Research in assessment II. **Chemical Society Assessment Group.** A247
Resins, Urea-formaldehyde. **J. Turro.** A380
Safely, Handling chemicals. **Dutch Association of Safety Experts.** A227
Safety, Better science through. **Jack A. Gerlovich** and **Gary E. Down.** A381
Soap films and soap bubbles, The science of. **Cyril Isenberg,** *editor.* A179
Solution, An introduction to physical properties of large molecules in. **E. G. Richards** and **S. D. Dover.** A377
Solution chemistry of surfactants: Vols. 1 & II. **K. L. Mittal,** *editor.* A30
Solution, Techniques and applications of fast reaction in. **W. J. Gettins,** and **E. Wyn-Jones,** *Editor.* A30
Solving general chemistry problems. **R. Nelson Smith** and **Conway Pierce.** A245
Spectroscopy, Analytical atomic absorption. **J. C. Van Loon.** A278
Spectroscopy, Manual on practices in molecular. **American Society for Testing and Materials.** A226
Spectroscopy, NMR. **H. Gunther.** A315
Spin eigenfunctions, construction and use. **R. Pauncz.** A381
Stereochemistry. **V. M. Potapov.** A246
Structure of crystalline polymers. **H. Tadokoro.** A378
Surface area, Introduction to powder. **S. Lowell.** A345
Surface contamination: Genesis, detection, and control. **K. L. Mittal,** *editor.* A32
Surfactants: Vols. I & II, Solution chemistry of. **K. L. Mittal,** *editor.* A30
Symmetry groups theory and chemical applications. **R. L. Flurry Jr.** A380
Techniques and applications of fast reactions in solution. **W. J. Gettins,** and **E. Wyn-Jones,** *editors.* A30
Techniques and experiments for organic chemistry. **Addision Ault.** A152
Terminology, The dictionary of chemical. **D. Kryt,** *editor.* A273
Tertiary science (a review of some recent developments), Laobratory teaching in. **D. J. Boud.** A68
Thermodynamics, Chemical. **M. L. McGlashan.** A177
Topics in carbon-13 NMR spectroscopy. **George C. Levy,** *editor.* A30
Topics in enzyme and fermentation biotechnology 3. Alan Wiseman, *editor.* A178
Toxicology, Quantitative. **V. A. Filov, A. A. Golubev, E. I. Liublina** and **N. A. Tolokontsev.** A246
Urea-formaldehyde resins. **J. Turro.** A380
Valence, Coulson's. **Roy McWeeny.** A206
Vinyl cations. **Peter J. Stand, Zvi Rappoport, Michael Hanack** and **L. R. Subramanian.** A179
Virial coefficients of pure gases and mixtures. A critical compilation, The. **J. H. Dymond** and **E. B. Smith.** A246
Wastewater treatment. **Donald W. Sundstrom** and **Herbert E. Klei.** A33
Water chemistry. **U. L. Snoeyink** and **D. Jenkins.** A382
Zeolites in catalysis, Application of. **G. K. Boreskov** and **Kh. M. Minachev,** *editors.* A206